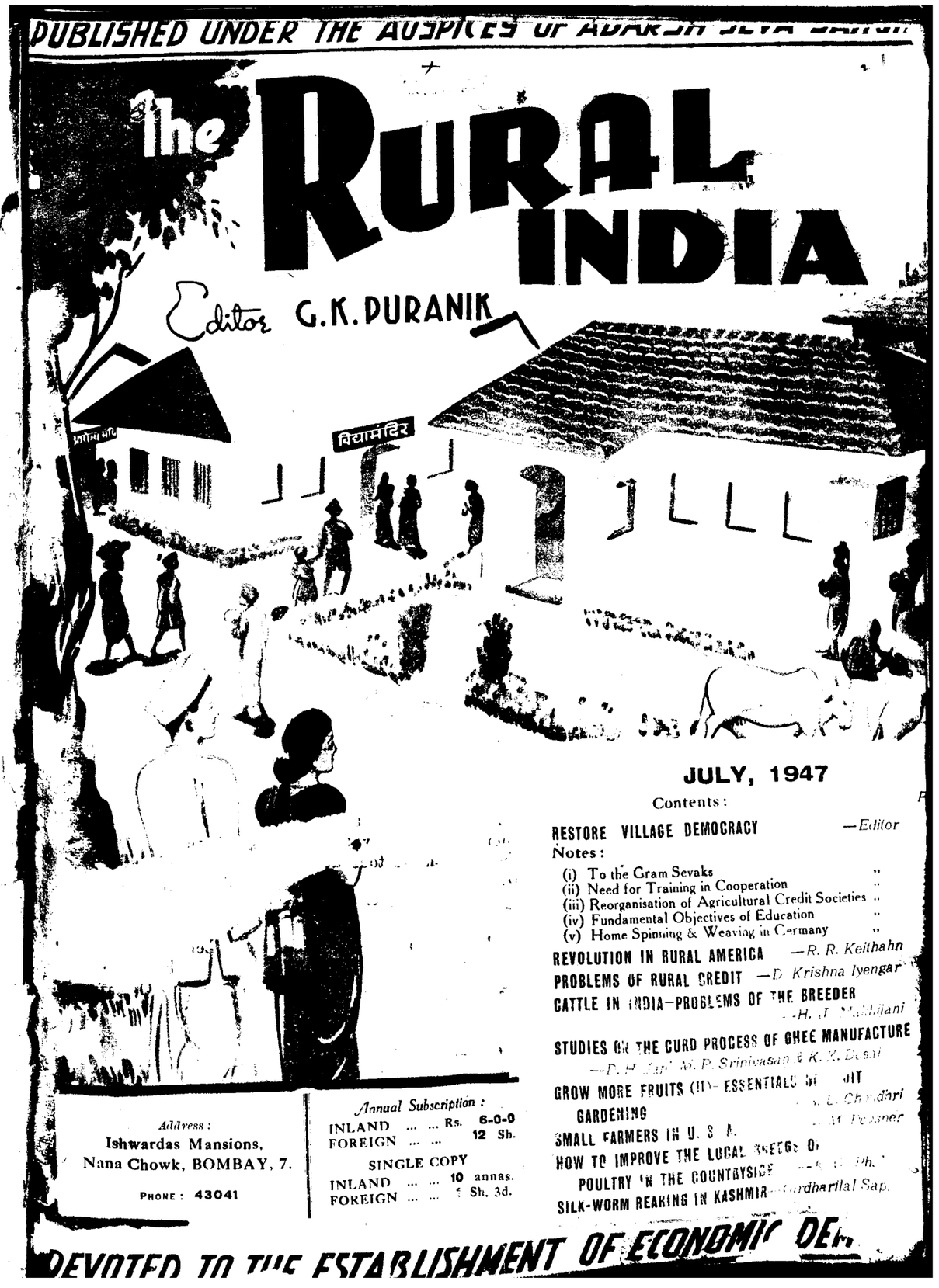
dangerous document and that it must be kept under lock and seal and that it should not be published. Of course, the Committee did not agree with them. Then, Madam, an attempt was made to see that the report was not presented to the House. The report was the property of the House because the Enquiry Committee was constituted on a resolution tabled by the present Revenue Minister, Mr. Kala Venkata Rao who was at that time an M.L.A. (Interruption.) The position may be reversed in a day or two and Dr. Subramaniam may be a Member of the Government to-morrow. What were the attempts made at that time? An approach was made to the then Governor, Lord Erskine, and he was told about the danger of this report being published or being presented to the House and he was asked to interfere in the matter. The then Speaker—I am sorry the present Speaker is missing from his Chair now—the then Speaker, Mr. Sambamurti, was advised by Lord Erskine to see that this report was not presented to the House. The then Speaker turned round and said, 'How can I do it; it is the property of the House and how can I say that the report should not be presented to the House' and so he wanted this report to be presented. Then the Bill was prepared and it should have become law but there were some unforeseen circumstances and obstacles. The zamindars are my good friends; I have no ill-feeling towards them, but I say there was a deputation of the zamindars at Bombay waiting on the High Command representative. That representative said, 'Friends have come and made representation.' This time the call came not from Delhi but from Bombay and the representative said that the question might be settled personally. There was a letter written by him to the then Premier, Mr. C. Rajagopalachariar. Mr. Rajagopalachariar showed the letter to me and asked me to reply to it. I told him that the letter addressed to him must be replied by him. He advised our friend of the Congress High Command not to come here at all. I told the Premier that the representative w[illegible] come here. At that time, the atmosph[illegible]re was thick wi[illegible] rumours and scandals also. When I was on [illegible] called Tekkali, an address was presented, as is u[illegible] countrymen. It was a printed address. It wa[illegible] the whole address, but after reading it, the person [illegible] to my side and whispered in my ear, 'There is a strong b[illegible] a strong rumour that yourself and your Premier took a [illegible] of two lakhs of rupees to suppress this Zamindari Bill.' [illegible] course, I w[illegible]very much astonished at it. I told the young m[illegible]low, you flattered me so much in print but you [illegible]ny ears.' I told him to write underneath the [illegible]he told me. I brought it and passed it on to [illegible] in view of such tension in the country, [illegible] write to our friend of the High Com[illegible]t this time. To-day, the same thing has [illegible]ttained freedom. An advice has been [illegible]d—I feel so strongly, Madam, on [illegible] it may be taken as a command from [illegible] change the whole thing in this



"My idea of village Swaraj is that it is a complete republic, independent of its neighbours for its own vital wants, and yet interdependent for many others in which dependence is a necessity. Thus every village's first concern will be to grow its own food crops and cotton for its cloth. It should have a reserve for its cattle, recreation and playground for adults and children. Then if there is more land available, it will grow useful money crops, thus excluding ganja, tobacco, opium and the like. The village will maintain a village theatre, school and public hall. It will have its own water-works ensuring clean water supply. This can be done through controlled wells or tanks. Education will be compulsory up to the final basic course. As far as possible every activity will be conducted on the co-operative basis. There will be no castes such as we have to-day with their graded untouchability. Non-violence with its technique of Satyagraha and non-cooperation will be the sanction of the village community. There will be a compulsory service of village guards who will be selected by rotation from the register maintained by the village. The Government of village will be conducted by the Panchayat of five persons annually elected by the adult villagers, male and female, possessing minimum prescribed qualifications. These will have all the authority and jurisdiction required. Since there will be no system of punishments in the accepted sense, this Panchayat will be the legislature, judiciary and executive combined to operate for its year of office.... I have not examined here the question of relations with the neighbouring villages and the centre if any. My purpose is to present an outline of village government. Here there is perfect democracy based upon individual freedom. The individual is the architect of his own government. The law of non-violence rules him and his government. He and his village are able to defy the might of a world. For the law governing every villager is that he will suffer death in the defence of his and his village's honour."

We believe all would wish for such a happy consummation! It is for the members of the constituent assemblies to frame such constitutions under which the idea of Village Swaraj as conceived by Gandhiji is materialised.

We are quite aware of the odds and difficulties confronting the materialisation of such an ideal, but all the same it is worth trying however short we may fall of it.

The Provincial Governments are trying to establish village Panchayats wherever it is feasible. The U. P. Government has already gone much ahead in this direction. The Bombay Government proposes to establish 5000 Village Panchayats in villages having a population of 1000 and above in the course of the next two years. There is also a move to allocate a part of the land revenue to the Panchayats to meet the expenses of administration and public welfare works. It is all good so far as it goes. But these are long, tardy and halfway measures to achieve the ideal. Mere establishment of Panchayats with the allocation of a part of the revenue will not be of much avail. While the Government of Bombay aspires to establish 5000 village Panchayats in two years, Mysore has already over 12000 Panchayats in the State. Similarly other States and Governments have also established Panchayats in their villages. But do we find any glimpse of the Village

Swaraj visualised by Gandhiji? Those villages may be a slight better than others without socalled Panchayats. But they are far from the ideal.

The first thing, therefore, that is needed is that provision should be made in the constitutions of the states or their units for the type of village administration and organisation conceived by Gandhiji. Necessary steps should then be taken to organise village units on that model. Of course, conditions in villages do not seem to be quite ripe for it at present. Time and again we have dwelt on the depth of degeneration to which the villages have descended where feuds and factions are the order of the day, where mischievous elements always have their sway over the weak good element, where the vested interests have a dominating voice in all village affairs and the ignorant, illiterate people are exploited by those in power in their own self-interest. It is simply a trying task to work under and improve such conditions. But optimistic as Gandhiji is, he held that the Village Swaraj of his dream, could be established even under the bureaucratic foreign government in 1942. He said, "Any village can become such a republic to-day without much interference, even from this present Government whose sole effective connection with the villages is the exaction of the village revenue."

Now when India will be free holding the status of an Independent Sovereign State it should be far easier to bring about such village Swaraj in the country. Let those who are in power work for it!

NOTES

TO THE GRAM SEVAKS

HON'BLE Shri R. K. Patil gave valuable advice to the Gram Sevaks when, in the course of his convocation address, at Maganwadi he said :

"First I would like you to become true Gram Sevaks. Do not entertain the idea of doing Gram Seva as a means of achieving any of your high ambitions of becoming a leader or gaining any other objective. This brings our ideal of Gram Seva to an undesirably low level.

"Secondly before serving the people of the village you should try to find out what is the difference between them and you. We find that people evacuate themselves on road-sides and do not even cover the excreta with earth. Do they do so because they have no knowledge that this practice is doubly wrong in as much as we lose so much of manure and at the same time we pollute the air. In my opinion it is not so. They do know that they are doing a wrong thing but they lack the urge from within to do the right thing. You should try to create that urge in them. No Government can do that. A Government can only take punitive measures. This will be of no practical use as long as this inner urge to do the right thing is not there.

"The next thing necessary is to create a feeling of group consciousness. Our people are too self-centred and individualistic so that they can do no useful work for the general good of the public. I do not mean organisations of the like of the

14263 3

Binding

1947–1949

"The Rural India"

Wanting Issues :-

Jan to June 1947
Augt to Oct 1947
Jan to Mar 1948
July to Sept 1948

Library
C8

STUDIES ON THE CURD PROCESS OF GHEE MANUFA
GROW MORE FRUITS
GARDENING
SMALL FARMERS IN
HOW TO IMPROVE THE LOCAL
POULTRY IN THE COUNTRYSIDE
SILK-WORM REARING IN KASHMIR

present Kisan Sabhas or Trade Unions. Every Kisan-sabhite would repeat parrot like that he wants Malguzari to be destroyed; every trade unionist would say that he wants to do away with capitalists. But if you ask either of them what good are you going to derive out of the destruction of both he will not be able to give any satisfactory reply. We do not want any group formation for such destructive ends. We want them to come together for some constructive work. If some villagers join together and do their farming on cooperative basis or some persons open a shop on cooperative basis to meet the needs of the people we should welcome that. I want you to inculcate that spirit of constructive cooperation in villagers.

"Lastly I would like you to inspire village people to take to village industries. It is no use entering on the academic discussion of whether village made articles would be nicer and cheaper than similar products made in factories. The fact remains that the villagers need some off time work to augment their income and that they cannot be drafted on to any factory or factories. So they must be provided with some work, and work in their own places comes in handy. The quality of their product is bound to improve with practice and if they appear a little dearer the Government should give them protection in some way or the other."

NEED FOR TRAINING IN COOPERATION

At the opening ceremony of a new Cooperative Training College and the Maharashtra Regional Cooperative School, Poona, Hon'ble Shri V. L. Mehta, Minister for Finance, Village Industries and Co-operation in the Bombay Government, declared:—

"The Congress Election Manifesto of 1936 speaks of the transformation of our society into a co-operative commonwealth. In conformity with this ideal, the Government wishes to encourage co-operative effort, particularly in the field of agricultural improvement, reorganisation of cottage industries, urban housing, and, to the extent organised comsumers prefer it, retail distributive trade."

He further said:—

"This is not, by any means, an ambitious programme but even then it can scarcely be put through with any reasonable prospect of success unless first we have a well-equipped, duly instructed body of workers, both paid and honorary, and unless the economic democracy we hope to see built up is made acquainted with the underlying principles of co-operation and with how these principles work in their practical application to the problems of our day-to-day economic life."

Indeed, there is a lamentable dearth of trained and efficient workers in every sphere of national activity. Every Government has a huge programme of reconstruction and development before it. But all plans would remain a dream unless there is a well equipped, trained and efficient personnel to execute them. The first step, therefore, that every Government must take is to set up a net-work of various types of institutions to train the needed number of workers for its respective schemes. Any amount of money invested over these institutions should not be grudged; for in course of time, they will bring about very rich dividend in terms of national prosperity and much coveted progress.

Besides the training of workers, there is also the question of educating the masses. No plan can successfully work

unless the people among whom it is worked, are educated and suitable conditions are created for it. Many a time one hears of the failure of cooperation. Why? Because the people have not been prepared and properly trained in co-operative principles and their methods of application. The cooperative movement is regarded as more of an imposition from without rather than a spontaneous organic growth from within. Hence it lacks the initiative of the people which is so essential for any success. Mr. Mehta rightly quoted Prof. Stuart's observations made as far back as in 1879 and what he then observed holds good in India even to-day: "If the mass of your members are not sufficiently instructed in the principles and practice of co-operation, there arises a real danger to the co-operative movement—your members become a hindrance and your possessions become a peril."

REORGANISATION OF AGRICULTURAL CREDIT SOCIETIES

There is a growing volume of opinion in favour of multi-purpose Societies to be organised in villages to serve all the immediate needs of the people through one organisation instead of many, i.e., one for each single purpose. Hon'ble Shri K. Chandramouli, Minister for Co-operation, Madras Government, rightly remarked, in his opening address at the 7th All-India Co-operative Conference held at Madras, that since the bulk of the rural population is agricultural and agricultural credit societies form the basis of co-operation in villages, they should not confine their activities to agricultural credit only, but should function as rural banks and that if they adopted the functions recommended by the Committee appointed by the Government of India, they would naturally develop into multi-purpose societies. He said:

"All movements, attempts and efforts—official and un-official—in political and economic fields must take note of the welfare of the rural population whose mainstay is agriculture. Every scheme that ignores cognisance of this aspect is bound to be a miserable failure. Otherwise they have no business to be formulated or put into practice. The socio-economic policy should create a new society without giving rise to disturbances and conflict and should be able to excercise an effective control over the means of production and distribution. Existing disparity between the rich and the poor should be narrowed down to elimination. The basis of all Co-operation in the rural part is Agricultural Credit Society. It is needless at this juncture to go into the details concerning the weakness and drawbacks of these societies. Again, they are too apparent and obvious. The limited activity of their functions is the most striking of all the drawbacks of these institutions. Rightly has it been stressed that these societies should function as rural banks. The word 'bank' has to be used in no narrower or stricter sense of the term. The village credit societies have to be organised on a fairly broad basis and have certain functions in addition to that of short and medium period loans and advances on personal security, immovable property, agricultural produce, jewels. etc. They have also to operate over a group of villages and not over a particular village or two. Then only they would be in possession of adequate funds to have regular offices, pay reasonable salaries to get an efficient staff and help their clientele effectively. The societies should be developed in such a manner as to enable

them to grade and market agricultural produce, purchase and own implements and machinery for the benefit of their members, own, hire and let out godowns to their clientele. The recommendations of the Committee appointed by the Government of India and which reported towards the close of the last year, envisaged the reorganisation of credit societies so that they may serve as a centre for the general economic improvement of its members and should, in particular, (a) finance crop production; (b) act as agent for the sale of crop to the nearest co-operative marketing organisation; (c) supply the farmer's simple needs for crop production like seed, cattle-feed, fertiliser and agricultural implements, and also consumers' goods like cloth, kerosene, salt and matches on indent basis or on the basis of established needs; (d) Serve as milk-collecting station for the nearest dairy and as a centre for animal first-aid and the maintenance of stud-bulls; (e) Serve as a centre for maintaining agricultural machinery for the joint use of members; and (f) encourage subsidiary occupations for its members.

"If societies can undertake these functions, they naturally develop into multi-purpose societies. Such multiple-societies have done good work in Denmark and a number of western countries. The question in India is whether we should not deliberately encourage the development of primary societies into such multi-purpose societies. The consensus of informed opinion has been steadily and largely tending to favour such development".

FUNDAMENTAL OBJECTIVES OF EDUCATION

There is not one who is not well aware of the glaring defects of the old British policy of education in India. The system of education pursued under that policy has been universally condemned. The new conditions created by recent developments in the country call for a new approach to the problem. Mr. G. K. Saiyidain, Education Advisor to the Government of Bombay, outlines four fundamental objectives which the educationists in India should henceforth place before them. In the course of a statement issued by him recently he says:—

"I feel that there are four things to which we need to devote our immediate and careful attention.

New Ideology

"Firstly, the creation through Education of a new Ideology. Within a few weeks, we shall be stepping into our long delayed, long-struggled-for freedom. What use we are going to make of this freedom? This will depend primarily, though not exclusively, on the proper utilization of our educational resources in the widest sense of the word. In stepping over into the threshold of our freedom, we have unfortunately had to pass through a nightmare of strife and destruction, of blood and misery which has embittered the hearts and warped the minds of large numbers of people. Such a spirit of hate and discord is no proper architect of a better future and the foremost preoccupation of all our public men and all our social and educational workers must be to heal these wounds, to disinfect hearts and minds and to develop an ideology of peace, co-operation and tolerance.

"It has to be sadly admitted that our schools and colleges have not so far played their due part in this endeavour. In fact, most of them have become tainted

strongly with the poison which corrupts the general atmosphere in the country. But I am sure they can do a great deal to save the younger generation from the follies and the fratricide of their elders and lay the foundations of a normal, healthy and humane outlook. This will necessitate a reorientation of their entire work—curricula, methods, discipline, organization of activities and above all the mentality of the teachers—and I feel confident it is possible to do so. It has been done in other countries with equally difficult and complicated problems.

Good Life

"There is another aspect of this question which we should not forget. Political freedom is, no doubt, difficult to win. But it is even more difficult to retain it and to utilize it as an instrument for achieving the 'good life.' In the past education has been manipulated, both consciously and unconsciously, for the preservation of the 'status quo' with all its glaring anomalies and deprivations and its suppression of national creative impulses. Now, education has to be reoriented so as to equip people for building up a free, co-operative, equalitarian society. The enrichment of the life of the common man should be the primary objective of all collective endeavour. This postulates a mentality which can rise above petty sectional and group interests and is prepared to subordinate its own good to the good of all.

Equality of Opportunity

"Secondly, the establishment of a genuine equality of opportunity in the field of education. It is imperative that we should provide educational facilities of such amplitude that all children and adolescents will have the chance of developing their innate talents and capacities to the fullest extent.

"Our educational planning must be guided and inspired by this ideal and even if, for inevitable financial difficulties, the scope of expansion has to be restricted, we must guard against the dangers of misdirection and condoning of educational inequality.

Approach to Life

"Thirdly, the establishment of a closer correlation between education and life. It is not necessary to repeat here the familiar criticism that our educational system has been too academic and aloof from the rich and pulsating currents of life and has, therefore, failed to take a dynamic part in the re-shaping of that life. The Basic Education Scheme, the Vocational Bias in Secondary Education, the development of Technical Education and many other such movements are facets of the same urge to reforge the broken links between education and life.

Adult Education

"Fourthly, the inauguration of a wide and comprehensive network of Adult Education for adults and adolescents. In some way I regard it as even more imperative than the question of universal compulsory primary education. Primary Education is naturally a plant of slow growth and, even with the best will and effort in the work it will take decades to mature. Meanwhile, generations of adults are passing their lives in the darkness of ignorance and illiteracy, with no social or cultural interests, no civic sense, no consciousness of missed horizons. It is these that we have to tackle by the provision of rich, varied and suitable types of adult education facilities for them."

HOME SPINNING & WEAVING IN GERMANY

War has completely shattered the economic life of Germany. No wonder, there is acute scarcity of clothing. To meet this situation, it is interesting to learn that home spinning and weaving is being revived and practised in the countryside where this art had not completely disappeared. Mr. Guy Bettany, Reuter's special correspondent in Stuttgart, writes:

"While Germans in the town are probably the worst dressed people in western Europe, their compatriots in the country villages are now dressing themselves in home spun and home woven woollens.

"Although in normal times Germany's textile industry was sufficiently developed to supply the needs of the whole population in clothes, many thousands of village people, especially in the mountain districts, kept alive the old crafts of home spinning and weaving. The districts on the Czechoslovak border, in Saxony, and the Allgau in south Wuerttemberg, on the Austrian frontier, produced many varieties of strong fabrics, often woven in picturesque colours.

"The drabber clothes were used for everyday wear and the brighter for Sundays when the country people turned out in their traditional peasant costumes.

"Now, owing to the inability of the textile factories to supply more than a tiny fraction of the national demand, the practice of home spinning and weaving has spread widely.

"In some country districts, practically all the women are learning either to spin or to weave. Spinning is easier than weaving and can be learned in a few hours but weaving requires much experience before a tolerable cloth can be produced.

"The townspeople have now heard of this new opportunity of obtaining clothing materials and are hastening to the villages to order home spun cloths or at least woollen yarn for knitting into jumpers, stockings and pullovers."

In India, it has been reported that with a view to relieving the acute shortage of cloth in the country, the Government of India has made arrangements to import on its own account 70 million yards of cloth from Japan. In addition to this, it is also proposed to purchase 12 million yards of cloth through commercial channels for which half a dozen importers who are in a position to purchase the cloth immediately, will be selected. What an irony that India which has centuries' old tradition of hand-spinning and hand-weaving which can be revived with far greater ease than anywhere else if due encouragement is given, should resort to a measure of importing cloth from outside while thousands of its own handlooms are languishing for want of organisation and adequate supply of yarn and the people in the countryside remain underemployed for lack of sufficient work during off season. It would have been much more in the interest of the country if spinning had been organised and the handlooms provided yarn thus turning the scarcity into an opportunity to become self-sufficient in cloth.

REVOLUTION IN RURAL AMERICA

By : **Ralph Richard Keithahn**

IT seems a long time since we left India in October, 1944. These are days when floods flow under a bridge during the year—especially if one attempts to live as a citizen of the world. Although we left with the words, "We hope you will return soon !" ringing in our ears yet it was an India that was in bondage. And now, in less than three years!—we return to an India that is so rapidly entering into a new era of freedom and activity that one can hardly keep abreast the new circumstances which challenge any thinking person.

How grateful we have been to the Editor of "Rural India" for taking us to see some of India's best Cinema productions—"Rama Rajya" and "Rama Shastri"—in those last days as we awaited our steamer. We had been in slum and village, carrying on literacy and other work in the evenings of preceding years. It has given us joy to be able to speak from experience as we replied to America's questions about India including the "Talkie". We are also grateful to "Rural India" during these intervening months for helping us to keep in contact with our adopted land. We extend our deepfelt thanks to the Editor and to you all for this contact with our lifework.

While we awaited our return in the U.S.A. naturally we spent most of our time in the rural areas. Our home was always there. Thus we write from experience regarding that remarkable rural life of the land which has given us birth.

Mechanisation

Where should one begin ! So many changes have taken place during the last



Mr. R. R. KEITHAHN
who has just returned to India, his adopted land, to serve again.

twenty years since we first came to India. Let me speak of the more evident first. As a youth on the farm we did all our work with horses. Very seldom was a tractor seen in the countryside in those days. Today the fields are full of tractors, and as we started back to India in the "Jeep" the children found it an interesting pastime to try to identify the various makes of tractors working in the fields. How often I have seen them working even during the nights in busy seasons as the searchlights darted here and there through the fields ! Many farmers do not even have horses on their farms in these days. Often horses are kept for the children as a means of recreation ! What a difference

from my day when there was hardly a day I did not ride a horse as a part of the work I had to do on the farm : herding the cattle, doing an errand, etc. But today all that is done with a car, tractor or jeep!

Industrialisation

One is also impressed by the new crops which have come into those fields. As a boy I knew nothing of soybeans. Today they are grown throughout America—not primarily as a food but as a commercial product to be used in making synthetics. The American farm is today very rapidly becoming a very important part of the industrial picture of the country. And that means that the farmer is rapidly becoming urbanised. Twenty years ago the farmer was largely moved to have a happy home for his family. I can still remember how surprised my own father was after the first World War to suddenly find himself growing comparatively wealthy as a result of inflated prices. That had not been his intention at all. But today there is a growing emphasis on the part of the farmer to make money! The profit motive is also supreme for him.

Co-operation

In another article I shall write in greater detail of the Cooperative Movement in America. It is growing by leaps and bounds. But when I talked with one of its outstanding leaders two years ago he frankly said, "The Co-operative Movement needs religion!" I think he meant that the Cooperative Movement of America tended to become just another way of making more money and did not always exhibit the real spirit and broad outlook of true cooperation. In other words even the Cooperative Movement has become an example of our tendency to place profit first in America.

The American Farmer is a Minority

As I made a more intimate study of rural life in America I was shocked to learn that only 25% of her population lived on the farms—that it would be only a few years when but 10 to 15% of the population would be able to take care of the agricultural needs of that rapidly developing country. Naturally one is shocked by such a situation as one comes from a part of the world where 80 to 90% of the people are to be found on the soil. I was speaking in one of our middle-western states and stayed in the home of a farmer who farmed 500 acres. He had done this with his boy but now the boy was in the army and the father managed alone with better and larger machinery. When I asked what his boy would do when he returned I was utterly amazed to hear the father say, "Oh he will have to find work elsewhere!" But where that elsewhere might have to be he did not seem to consider. For some more months extra consumer supplies will be needed. Man power can be absorbed in industry. But that day will soon end. Then what are these sons to do! Even our farmers have become so dominated by the thought of making money that they are adding field unto field, house unto house as is typical of modern civilisation in the West. And never giving a thought to the needs of their brother or even their son!

Luxury

One of our Indian friends came to visit us—200 miles south of Chicago. Intentionally we sent her to visit one of our better rural homes. However, there were scores of similar homes in that area. And that is not one of the most wealthy rural areas of America. When she returned to our home she remarked repeatedly, "I just cannot believe it! Are there

really other homes like that! So cultured and with so many modern conveniences?" Yes, the average farmer, in America, does have a good home, modern sanitary equipment, an electric refrigerator, a gas or electric stove, electric lights, a telephone and a good radio! Outside he has his tractor, lorry, car, and all the good machinery that must go with seeding and harvesting. In fact, it is not exceptional for a farmer to have Rs. 15,000 invested in his machinery alone! What a contrast to my day! And what an almost unimaginable contrast to conditions as we know them in the East.

Lack of Neighbourliness

This machinery tends to make the farmer more independent. Hence he does not cooperate with his neighbour as he once did. In a few minutes his car can take him to the town for social diversions. Hence, many of the more thoughtful farmers are concerned to realise that the farmer is not as neighbourly as he once was. In other words, urbanisation of the rural life of America is bringing the problems of the city also to the farm. As a result there are a few small groups starting cooperative farming. They feel a call to the mission of restoring the virtues of rural living to the American rural community. Had we remained in America there is little doubt but that we would have been associated with such a group. In fact, Merom Institute, with which we had been associated during the last one and one-half years, had its objective just this task.

Resources

But although rural America faces some very real problems yet she still has great resources with which to work. I am not primarily interested in the material resources although they are not of little importance and beyond the comprehension of anyone who has not seen them. As a rule, the American farmer may do whatsoever he sets his mind to in so far as material resources are concerned. However, he needs to be careful for in several parts of the country he has farmed recklessly and soil erosion has been so serious that the land has been sadly depleted. However, he is today growingly aware of that danger and with the Government is beginning to practise intelligent soil conservation seriously. Contour farming is more and more prevalent. However, commercial farming is always a temptation to take more from the soil than is returned. Many farmers are college graduates. Rural education is good. There are more and more consolidated schools up through the high school. Junior Colleges are to be found everywhere. The "Farm Bureau", the largest farm organisation, has its own rural institutions—4 H clubs, Farm Camps, County rural advisors, short courses for youth and for adults. In fact, adult education is a very important part of the work of any farm group. Any interested farmer, and most of them are, has plenty of means to know what is going on: through Government bulletins and special courses, through radio programmes from Agricultural Colleges, through many rural papers and magazines. And one is impressed by the growing intelligence and leadership of the American farmer.

Heifers For Other Lands

There is still a great deal of good will among our farmers. One of the most impressive goodwill projects of recent months has been the "Heifer Project" through which farmers have become intensely interested in the urgent needs of other lands. They themselves have organised and carried through the securing

of over 3,000 heifers and sending them to needy farmers in China, Europe and South America. I am hoping that they will also send some to India. They are deeply interested in so doing but are not yet convinced that India can make the best use of them. I wish that "Rural India" might take the lead in making a proper distribution of such heifers as farmers of goodwill of America might send so that our own farmers might eventually be truly benefited. It is a problem of getting those heifers to a place where the Indian climate will not be too trying for them, of gradually crossing them with the best of India's breeds so that a better stock might result. I would be grateful to hear from readers of "Rural India" as to the feasibility of such a project. This goodwill of the American farmer expresses itself in many ways. I need not give further illustrations.

The Farmer's Religion

Although it is not easily proved yet I am convinced that the American farmer is the most potentially strong religious man of America. I still feel that the man of the soil is normally closer to the great eternal realities and therefore provides the best foundation for human welfare. And yet, in America although many of our farmers are very religious a very large percentage is ignorantly conservative. You would not believe, if I were to tell you some of the religious actions of some of these 1947 farmers. They are modern so far as their machinery is concerned. But their religion is disturbingly backward. This was again the reason for such a work as carried on by Merom Institute. Most of the religious groups of America are growingly aware of this problem and have organised rural departments to strengthen the rural church. I fear that these are but weak attempts, however, at meeting what is a very large problem from almost every point of view.

What may we learn from the American farmer?: that modern machinery may be a great blessing—but also a serious problem. That rural life may become as attractive as city life and more so. That one of the great problems of the future will be the tendency to urbanize rural life. That cooperation has great possibilities especially when used to promote the entire good life of the farmer.

PROBLEMS OF RURAL CREDIT

By: D. Krishna Iyengar

Agriculture is the basic industry. It is more important to mankind than any other industry. Both from the economic and social point of view it makes the constructive development of rural welfare imperative. In fact, agriculture is the trunk of the gigantic industrial tree, from which most of the other industries branch and draw their sustenance from it. A nation not only draws all the food supply from agriculture, bus also most of the raw materials for the manufacture. Almost all the activities that centre in cities are so vitally related to agriculture that bankers, industrialists, and city wage earner are concerned in maintaining its growth and development.

Agriculture is more than industry. It is a way of life. The farm and farm-house are inseparable. Merchants and manufacturers do not live together; neither the employer nor the employee at the place of employment live; the architect does not dwell in his temple, nor the engineer on his bridge, nor the miner in his mines. But the farmer's work is centred at his home and the farm. The life as well as the income of three-fourths of the people of the country is determined by the activities and the surroundings of the farm. A vigorous, intelligent and wholesome rural life is essential. The quality of the farm life has not improved as the quality of life in the city and even agriculture has not kept pace with other industries. Isolation, and limited educational opportunities, religious stagnation, unprogressive methods of business and more than all insufficient capital and credit facilities have all combined to put the country at a disadvantageous and backward position.*

The problems of rural credit and indebtedness go together and these lie at the very root of our rural uplift. For want of better facilities of credit, the agriculturists used to borrow from the local sowcars and money lenders and very often they borrowed money for domestic purposes and not to develop their land. The money lenders were the main source of rural credit and the defects of this system were many.

Defects of Rural Credit Supplied By The Money-lender

The money lenders lent money for unproductive purposes and very often they debauched the cultivators with loans for any and all purposes. In fact, money lending got mixed up with personalities and parties causing feuds and factions in villages. The borrower never confined his borrowings to farming and land development, and other absolute necessities. The nature of our rural people is such that once borrowing was resorted to, there was no limit. On account of this it became expensive, besides there was high rate of interest and very irregular payments. Rural people are often in the habit of buying on credit and this mixture of shopping and borrowing have become fatal to many and most of the people have run into heavy debts owing to their careless habits. Debt-ridden people cannot raise their standard of living and debt is no incentive to hard work. Under such circumstances once a man is in debt, he is always in debt. Cultivators often complain that they cannot cut down their expenses on family ceremonies. What blessing it would be if there is a limit to credit even for productive purposes! *

The indebtedness of rural population has increased in the past. The following figures show the increase and the purpose for which they have borrowed.

Estimated by	Year.	Amount of debt.	Remarks.
Sir Edward Maclagan ...	1911	300 crores.	Basis, Nicholson Report.
M. L. Darling ...	1925	600 ,,	,, Punjab figs.
Central Banking Enquiry Committee ...	1929	900 ,,	,, Provincial Figs.
Agricultural Credit Department Report ...	1937	1800 ,,	,, Provincial Figs.

The purpose for which debts incurred was classified as follows:—

Purpose.	percentage.
Payment of old debts	25.1%
Purchase of land	13.8%
Trade	12.9%
Marriage and ceremonies	10.5%
Agricultural expenses	10.0%
Building houses	5.6%
Relief of distress	6.1%
Improvement of land	4.4%
Payment of land tax	3.3%
Education of children	1.4%
Other purposes	6.9%†

*The Rural Community: by L. Macgair, M. A.

*Better Village: by F. L. Brayne.
†Mr. Sathianathan's Enquiry Report, Madras.

The following rate of interest is in vogue in different parts of the country and this will give an idea of the extent to which the cultivators are being exploited.

Provinces	Variations of rate of interest
Madras	from 12 to 50 %
Bombay	12 to 50 ,,
Bengal	10 to 37½ ,,
Bihar and Orissa	25 to 50 ,,
C. P.	25 to 50 ,,
Punjab	13½ to 75 ,,
U. P.	18 to 37½ ,,
Mysore	12 to 25 ,, *

It is impossible for a money lender trading as he does upon his private capital supplemented by occasional borrowings to satisfy the demand for loans at any time and to any amount. He has no rules save those of his own conscience and they are variable at pleasure. His accounts are subject to no check or audit and he is apt to be swayed by greed whether of money, land or power. Since the money lenders are not entrusted with the powers of distraint or other summary recovery, they are put to expenses, delay and loss and they have to recoup all these from their clients. Owing to these defects the substitution of organised credit for that of the money lender was a necessary development of civilisation. Hence Government assistance to rural credit in several forms came into existence.

Land Improvement Loan and Other Acts

Grant of taccavi and land improvement loans were the ancient form of State help. Taccavi advances were first issued so far back as 1793. Subsequently a number of Acts were passed in 1871, 1876, and 1879 by the Government. In 1893 the Land Improvement Loans Act was also passed. All these were intended to provide credit facilities for effecting permanent improvement in agriculture. The word 'improvement' meant to increase the letting value of the land. Land Improvement Loans Act was meant to provide long term finance and under the Agriculturist's Loans Act short term loans were granted for current agricultural needs. The taccavi advances intended to help the cultivators in agricultural operations. The annual grant of credit under these three Acts was not much. The Indian Governments on an average granted 95 lakhs of rupees of taccavi, Rs. 35 lakhs Land Improvement and 60 lakhs Agriculturists loans. Compared with the total indebtedness of the country these credit facilities were nothing. Besides the borrowers were reluctant to imperil their credit with the money lender. The delay in the disposal of applications for loans, the inelastic and rigid method of collection and other minor defects in the revenue agency made these credits unpopular and a failure.

Loans granted under Land Improvement, Taccavi and Agriculturists Loans Acts in 1937—38.

Provinces.	Outstanding at the beginning of the year.	Advances during the year.	Collections during the year	Balance Outstanding.
	(in Lakhs of Rupees)			
Assam	7.64	.24	.31	1.59
Bengal	32.64	3.62	21.33	9.26
Bihar	40.00	1.64	7.73	12.00
Orissa	1.98	1.15	.42	.45
N.W.F.P.	13.37	2.07	1.09	9.72
Punjab	52.17	12.24	11.39	54.84
U.P.	35.02	19.42	22.41	33.25
C.P.	60.93	7.69	11.08	58.10
Berar	6.81	8.29	4.46	1.59
Sind	50.94	.03	3.98	48.86
Bombay	63.59	9.57	9.28	66.14
Madras	84.54	9.54	10.76	83.26
Mysore	8.12	—	2.92	5.20*

*Central Banking Enquiry Report.

*The Indian Rural Problem: by Sir Manilal B. Nanavati and Prof. J. J. Anjaria. 170

Rural Credit and Cooperation

Introduction of co-operative movement was another measure which meant to create credit to the rural population. Though the movement is not confined to rural parts yet the great bulk of societies are still rural. The co-operative Society's Act of 1904 prescribed broad principles, with an object to encourage thrift, selfhelp and co-operation among rural people. Societies were classed as rural and urban. The Act of 1904 did not make any provision for societies for purposes other than the supply of credit. They were on the model of the Raiffeisen and Schulze Delitsch societies of Germany. The Act of 1912 legalised these institutions and they were classified according as they are limited or unlimited. To review the progress of the movement, Committees were appointed from time to time and they made suitable recommendations.

Statement showing the growth of Co-operation

Year	No. of Societies	No. of Members	Working Capital Rs.
1905	12000	550000	54800000
1920	28000	1130000	115180000
1925	58000	2150000	363600000
1930	94000	3690000	748900000
1935	106000	4320000	946100000
*1940	137000	6080000	1071000000

The Provincial Co-operative Bank is the highest body both as a provincial financing body and as an agency for mobilising the surplus funds of other societies. They attract large deposits and can obtain loans from provincial Governments. Below them there are the Central Co-operative Banks and these guide and supervise the primary societies. In 1940 there were ten Provincial Co-operative Banks and about 600 Central Co-operative Banks with Rs. 13.4 and Rs. 29 crores working capital respectively. Among the primary societies there are agricultural and non-agricultural societies. These types consist of credit societies, sale, irrigation and other kinds of societies. The Agricultural societies are Raiffeisen in character and non-agricultural societies are Schulze Delitsch. The depression of 1930 and the fall in agricultural prices seriously hampered the growth of co-operative movement.

Reserve Bank and Rural Credit

The Reserve Bank of India, as the central banking authority of the country has set up an Agricultural Credit Department and this maintains an expert staff to study the questions of rural credit and after consulting the Central and Provincial Governments and other banking organisations it coordinates the work of several banks that are engaged in providing rural credit. Some of the well managed cooperative banks have always found the Reserve Bank of India willing to accommodate them in times of seasonal stringency to provide rural credit to tide over emergency. Agricultural Credit Department of the Reserve Bank has advocated the institution of the multiple purpose society as the primary unit in rural parts. *The Review of the cooperative movement of the Reserve Bank observes that the movement was passing through a crucial phase and the part played by cooperation in providing rural credit has been disappointingly small. This failure is due to the insecurity of agricultural incomes and their steep fall during the depression. The movement also failed

*Our Economic Problem: Wadia and Merchant, 200

*Reserve Bank Review of Co-operative Movement, 24.

to apply the principles of cooperation to the general regeneration of the rural population.

For the supply of long-term rural credit, and for the liquidation of past debts and improvement of land, the establishment of Land Mortgage Banks was found to be most suitable. The first Bank of this kind was organised in 1920 in the Punjab. Then it spread to Madras and Bombay and other provinces and States. The first bank was established in Madras in 1929 and in Bombay in1935. Bengal had only five banks by the end of 1940. The Reserve Bank Review has pointed out that these banks have been too much concerned with the redemption of old debts, and too little with the improvement of agriculture by providing rural credit.

The following statement shows the operation of Land Mortgage Banks in India in 1941-42.

Provinces.	No. of Societies.	Loans Advanced. Rs.	Loans Outstanding. Rs.	Loans Overdue. Rs.
Madras	119	40,40,114	2,63,78,791	1,10,950
Bombay	17	5,58,398	33,31,203	89,992
Bengal	9	84,120	6,56,656	48,455
Punjab	10	93,271	9,28,843	5,73,272
Mysore	65	3,61,765	15,73,987	6,848
Baroda	2	1,45,525	7,87,490	474
Cochin	1	2,74,750	18,29,700	26,065*

There are several forms of societies which are trying to provide rural credit. Among them the primary societies, both credit and non-credit, agricultural and non-agricultural societies are important. Agricultural non-credit societies are of several kinds, such as marketing and crop loan societies, better-living, better farming and irrigation societies. There are also crop-protection, colonization and cattle insurance societies. The cooperative movement has helped a great deal to a lowering of the interest rates in rural parts. It has encouraged the virtue of thrift, self-help among villagers to some extent. On the whole it did not produce originally expected results. It has failed to afford sufficient rural credit and did not deal with the villager as a whole in respect of all his requirements. Co-operative action, in the west, has proved how it can transform the whole human being, his personality, character, attitude to the community and to life. "Roughly outlined in this way the rural co-operative society is seen not only as a factor in technical progress and material well being; it is seen also to be an instrument of economic organisation of vocational training and discipline, a centre of spiritual life and general education, a cell in the new social tissue, which is re-establishing or carrying on that vital, solid cohesion and systematic collective defence which family feeling neighbourliness and the tradition of mutual help kept alive in the old village community."*

In the light of the above observation is not the achievement of co-operation in India too small? When the cooperative movement in the west has evolved into a movement of rural reconstruction, can it not do the same in India also? It is said that in India we have the foundation for the growth of cooperation through the village Panchayats. It is through them the problem of rural credit should be solved.

* The Indian Rural problem: Sir M. Nanavati and J. J. Anjaria. p. 197

* Cooperative Action in Rural Life, International Labour office; 7.

CATTLE IN INDIA
PROBLEMS OF THE BREEDER

By: H. J. Makhijani

SEN and Krishnan (Indian Farming, Vol. II, 1941, p. 289) are of opinion that "Inspite of the immense value of contribution of our farm animals to our national wealth, we have every reason to be perturbed at the pitiably low level of efficiency that every single phase of the industry reveals", and Sir Datar Singh (Developing Village India, 1946) is of opinion that "From the economic point of view the present position of cattle is anything but satisfactory". Careful estimates put the average annual milk-production of our milch cows at 525 lbs. and buffaloes at 1250 lbs., the interval between successive calvings 24 months and the age at first calving 4½ years. In well-managed herds, the average annual milk production per cow is about 3000 lbs., and per buffalo 4000 lbs., the interval between calvings 15 months and age at first calving 3½ years. The average at the lower end which broadly represents the country, clearly indicates the very low productive efficiency of our cattle. No wonder, then, despite the population of 22 bullocks per 100 acres of cultivated area and 18 milch and breeding cows and buffaloes per 100 human beings, shortage both of bullock-power and of milk is the normal feature of the country's agricultural economy. The report on the marketing of milk in India & Burma (1941) estimates the per capita daily consumption of milk at 5.8 oz., while the minimum per capita daily consumption of 10 oz. is recommended by the Nutrition Advisory Committee, for maintenance of good health.

It is perhaps only in our country that with advance in civilisation and science the conditions for breeding and rearing cattle have progressively deteriorated. Even in highly industrialised countries like the United Kingdom and the United States of America, the agricultural and livestock industries are highly developed. The state has been fairly alive to the problem and from time to time has made efforts to improve the cattle and dairy industries but the progress has been rather very slow. The farmer's bullocks are getting weaker and he finds that a pair of good bullocks is beyond his means to purchase. In fact the cumulative result of progressive deterioration on the dairy front has led to a very strange phenomenon with which our urban areas are now fairly familiar: the phenomenon of soaring prices of milk and milk products accompanied by increasing scarcity. On the agricultural front, too, the farmer's current experience is equally tragic. Several anomalies emerge. The dairy farmer knows that despite good price for milk, his business does not give him a good return; and the cattle breeder knows that inspite of his working day and night, he is hardly able to make a bare living and that for 9 months in a year his cattle are semi-starved. Obviously, therefore, the problems of the cattle breeder have not been fully understood and appreciated. Usual experiences of the rural cattle breeder may, therefore, be of interest. They are recorded from my personal experience in the form of a realistic dialogue.

Visitor— How Are you ?

Cattle-Breeder-Very well, Sir, with God's and your grace. How are you, Sir ? Will you have something to eat and drink—milk, 'lassi', butter ?

V. I am al-right-thanks. Yes, I would love to have some 'lassi'. How are your cattle ?

C. B. With God's grace they are doing very well, Sir.

V. But I see them look weak.

C. B. So I am also, Sir, and so is everybody in the village.

V. Yes, so I see, but why? What is the reason ? Was there any epidemic ?

C. B. No Sir. God may keep our cattle and us. We don't earn enough to feed our cattle as well as ourselves.

V. But why is that so ? I know, all cattle and dairy owners are making profits and have become rich. I find them fat and greasy. You are having cattle, milk, 'lassi', butter and still you complain that you are poor.

C. B. Yes Sir, you are talking of people in towns. They may be making profits and getting rich. We here don't do like them. There is God above and we have faith. We don't follow their methods.

V. What are those methods that you don't like to follow by which the town dairy man has grown rich.

C. B. Sir, we don't sell our milk while the town dairy-man sells milk as such and gets a good rate for it. We also learn that town cows give plentiful but thinner milk; that is how the town dairy man may be making profits.

V. You said that you don't sell your milk, then what do you do with it ?

C. B. We don't sell milk as such because nobody will purchase it from us here. We being away from towns, find it difficult to take it there twice a day, and every day. We tried it for once or twice and in one case we went by bus but before we could reach the town, the milk had soured and in another case we went by train but we reached there so late in the day that the market rate had dropped. So we prefer making ghee from it and then selling when convenient.

V. So much the better; ghee should be more paying; after all it is now selling at Rs. 160/- to Rs. 180/- a maund; besides you get 'lassi' for your use.

C.B. That is true. We get some 'lassi' for our use and that keeps us alive. Ghee at Rs. 160/- to Rs. 180/- per maund gives a return of Rs. 7/- to Rs. 7/8/0 per maund of milk, while the town dairy man makes Rs. 15 to Rs. 20 per maund of milk.

V. You can also be rich. You should keep such cows that would give more milk from which you could get more ghee and thereby earn more, and feed your children and cattle better.

C. B. Yes, that is correct—our own cows are very good but we cannot give them the quantity of feed they require. After the rains when there is good grazing our cows give lot of milk. Then cows are happy and we are also happy and rich. When the grass is finished cows get weak and give very little milk. We don't

have money to purchase lot of grass and feed them. When cows give less milk, we too become poor. We love our cattle and we love our children also and so with what little we earn we spend some on food for our children and the rest on food for cows. I have now 10 cows out of which 6 are in milk and 4 are dry, there is one bull, 4 heifers, 4 bull calves and 10 young calves. I get only 25 seers of milk a day, which gives me 'ghee' worth about 5 rupees. Now my animals require 12 to 14 maunds of green grass or 8 maunds dry and green mixed which costs about Rs. 9/- and 10 seers of concentrates that cost Rs. 2/- i.e. Rs. 11/- per day. I know if I feed this Rs. 11/- worth stuff, I would get nearly double the quantity of milk that I am getting now, i.e. about 45 seers per day which will bring me about Rs. 9/- a day. That is, I shall still be under loss of Rs 2/- per day and there will be no money left for my family food, and I shall go under a debt. So you see, sir, the best thing for me is to make my both ends meet. We feel it advantageous to feed our cattle less and have a little for ourselves also. We consider this the most profitable level for us and our cattle, though obviously that is not in the interests of the country. Now my income is Rs. 5/- per day. I spend Rs. 4/- on my cattle and Re. 1/- on my family food. This is how we are managing.

But you said that you are rich when after rains there is plenty of grass on the land. Then you must be saving all that amount and you could spend that when the grass is finished.

C.B. Yes, Sir, we are no doubt rich for those two or three months, when there is plenty of grass around. The milk yield goes up but the prices of milk and 'ghee' go down. I get then about 1½ maunds of milk daily and that gives me ghee worth Rs. 8/- per day. Out of this I pay Rs. 2/- per day as grazing fee, Rs. 2/- on concentrate feeds and spend about Rs. 2/- per day on my family food as we also try to feed and look well. That leaves me with about Rs. 2/- per day as saving for about 2½ months. It makes about Rs. 150/-. Out of this I spend about Rs. 100/- on purchase of family clothes, small house-hold furniture, shoes, milk buckets, ropes, jaggery, salt, spices, country drugs, etc. Besides I make about Rs. 100/- to 150 by sell of a few animals and this gives me a saving of about Rs. 150 to Rs. 200 which gets finished when some sickness comes in the family or there is a marriage ceremony or other necessity.

V. How is it that you make only Rs. 150/- by sale of cattle ? You are a cattle breeder and your major income ought to be from sale of cattle. You should be selling 6 to 7 animals annually and getting Rs. 600/- to Rs. 700/- for that. Then what do you do with your surplus stock ?

C.B. Yes, normally I should have about half-a-dozen animals for sale every year, which should fetch me Rs.600/- to Rs. 700 but now-a-days the outbreaks of cattle diseases have been rather frequent and take a fairly

heavy toll. Occasionally there are cattle thefts by which we lose a few animals. On the whole I have hardly one or two young bull calves and one or two old cows for sale every year, which fetch me just about Rs. 150/-.

V. Can't you do something about the cattle diseases? If you could save your cattle then you would have more income.

C.B. We take good care of our cattle but when the cattle are weak, diseases spread quickly and we haven't enough money to feed our cattle well and keep them strong.

V. What do you do when your cattle are stolen? Don't you get any assistance from the police?

C.B. No, the police would not be of much use in this regard because the thieves are tricky professionals and if we report to the police we would be in greater trouble. We go and beg their chief and sometimes we get our animals back after paying 'bunga' of Rs. 20 to 30/- per animal.

V. Now another point—don't you agree there are some good cows which give more milk and some bad cows which give less milk and if you only keep good cows you will do well as they will always give more milk in proportion to what they eat?

C.B. Yes, Sir, that is true. The good cows also become poor when there is no grass on the land. And another thing is that good cows require good ample feed, good care. If there were plenty of grass our poor cows that you see now would also become good. We know all that. We cannot sell our cows and go and purchase other cows. Good cows are very costly and you know when a disease comes along good cows invariably die and then we would lose everything. So we have to keep more animals and also such that don't die of diseases, but sometimes we purchase or get in exchange one or two good animals with a view to introduce new blood in our herd.

V. I have heard that a good bull is 'half-the-herd' but see your bull is very weak. Why can't you feed the bull well and have atleast half the herd doing well.

C. B. This is very true, and I feed my bull well enough to keep it alive. It is no use feeding the bull well and keeping the cows poor; no better purpose will be served thereby. A good bull is useless when cows are weak and as you suggest that I should feed the bull better, it amounts to taking some cows' feed and feeding it to the bull, that will not be good.

V. But I know a Government Department gives out some good fat bulls to cattle-breeders free of charge; why don't you take one like that?

C. B. If they give us the bulls and permit us to sell these away then we would like to have as many as possible. Last year an officer came to us here. He was a nice man and told us lot of news of the town and also about the war. He said he would give us two bulls for the village free of charge and along with it Rs. 10/- monthly for each for maintenance. We told him, "We do not want the bulls, because when our cows

are poor, we don't require bulls and when our cows become fat again, our bulls also become fat and serve all the cows." If a fat bull comes in, it will bully all other animals and eat away their feed and in Rs. 10/- per month per bull, what can you feed it?—only ½ md. of green grass and that is not sufficient. He should have daily at least one md. green grass and 2 seers concentrate rations and that would cost Re. 1/- per day. And should the condition of the bull go bad we are sure to come into trouble, but should it die then we are sure to be sent to prison to die there.

V. No-no, it is not so. You have unnecessary fears. The Government have changed their policy and now they are for the people.

C.B. I am telling you from our daily experience. We cattle-breeders are never afraid of things. Suppose the Government bull died naturally there would be investigation as regards the cause of death. Then police would come. They would straight away tell us that either the bull died of starvation or that one of our own bulls had died and we had falsely reported that the Government bull had died. Now what we poor men are going to say to the police. They would call us to the Police Station every now and then and not only to bother us but ill-treat us also.

V. You are partly right, but certainly you can always get redress against police high-handedness through the court of justice.

C.B. We cattle-breeders don't have time to go and complain to any one, and after all who is going to hear a poor man. We poor people are afraid of officers.

V. That is not manly at all. A man should not be afraid of man. You should organise yourselves into a body and then make demands on the Government and the Government shall have to agree, and thus you can prosper. You see the factory workers, how they have organised themselves and are always getting increased wages and better facilities. You could do something of that sort.

C.B. We cattle-owners are already well organised. Our pleasures and sorrows are common. By organisation you perhaps mean having some building for office and arranging lectures etc. We don't have time for all that. It is different with factory workers who have 8 hours working day and Sundays off.

V. Unless you join together and make the neeessary demands how is the Government to know about your difficulties and requirements?

C.B. If the Government wish to do something they can do it. They know our requirements very well. So many officers come here every second or third month and talk to us and see how we live, how we work, what are our difficulties, our requirements etc. and they promise to do so many things but nothing is done. That is our country.

V. It is good that the Government have appointed so many officers to help you.

C.B. What is the good? Everybody says that Government is trying to help

we cattle-breeders but we don't find any real help coming forward. Our chief requirement is cattle feed, plenty and cheap, so that we may feed our cattle very well all the year round, and we have told this to many men of Government, yet nothing happened.

V. Naturally every thing will take its own time. When there is not enough production of cattle feed how do you think you can get plenty of it all the year round and at cheap rates. The Government must take some time to study the whole problem and then take proper steps.

C.B. These are all excuses. It is very simple. Government can encourage production of more fodder crops by giving small subsidies; they can take charge and improve all grazing areas which have now become no-body's concern; they can develop so much of waste land lying about for grazing and fodder production. If Government find it difficult they can give us these areas and we shall improve and cultivate these. What is the difficulty, if their intentions are sincere?

V. I have been hearing that government have formulated similar developmental plans. But you seem to be entirely depending on Government for help. After all Government cannot do very much unless the people take the initiative themselves. Self-help is the best help. You should yourselves join together, form a programme of development and work on those lines. The Government could then assist you and even a little assistance then would be of great advantage.

C. B. We can very well manage our affairs, if Government do not interfere in our day to day life. Our fore-fathers had a free life and lived quite happily. In fact our profession was then an honoured one and cattle were reputed for quality. Now, you see there are so many restrictions put on us. We cannot move with our cattle as we like. The pastures have declined in size and quality and we have to pay very high grazing fees for the meagre grazing. The forest grazing is prohibited and whatever is available is meagre and costly. Our profession is considered as an inferior one and our status is lower than that of a city worker who has no property. We are often taken to be thieves and decoits and treated shabily. Under such circumstances what can we do ourselves. If we settle down on a piece of waste land and try to improve it, down comes a constable with a warrant of arrest for occupying Government property without permission. When we ask for permission, it is never granted. As a slave looks to his master for better consideration and treatment, we look to the Government for help.

V. I see your point. I would all the same advise you not to get disheartened but organise yourselves into a Cattle Breeders' Society and bring your requirements to the notice of the Government. You perhaps know, our own people are now Ministers and good men as they are, they will certainly do something for you.

C.B. It is no use. All officers are alike in their promises. Even good men, when they become officers, change. However we shall try.

V. I think it would be worthwhile. I should be going now—thank you for the nice chat and for the 'lassi'. Good-bye.

C.B. Thank you for coming; do please come sometimes and help us. Good-bye.

STUDIES ON THE CURD PROCESS OF GHEE MANUFACTURE

By: D. H. Jani, M. R. Srinivasan and K. K. Desai

(Continued from June, 1947.)

PART III

The Study of an Improved Indigenous (Geared Type) Churn

AMONG the three factors of (a) processing (b) souring and (c) churning, contributory to the efficiency and yield in the curd process, churning itself is a main factor, although the first two tangibly help in the successful churning. Still standardization of the factors (a) and (b) above will be of little avail without improvements in the churning device.

The indigenous churn–paddle rod, varies in construction and efficiency from province to province. The deshi one used in the present studies was of the Gujarat type considered as one of the best models in India. All these deshi churns are worked by one or two persons giving continuous alternate rotatory motions in quick succession by briskly pulling the ends of the cord wrapped round the pole. Thus the paddle pole churns the curd by the clockwise and anticlockwise motions in quick succession. The effect of this is that the curds–cum–water emulsion is beaten from two opposite directions, hence the (a) time and (b) labour required in this device is obviously tiringly too much and (c) the loss of butter–fat by this defection is unnecessarily heavy, which are seen to be minimised by the standard method. Again the butter (d) cannot be properly washed in this device.

Therefore an improved churn must be so made as would avoid the alternate opposite motions and admit of washing. A geared churn only can bring about this desideratum. A geared churn was used with some preliminary modifications by the logic of use and observation. It had 30 toothed driven wheel and 90 toothed driving wheel with a balancing wheel fitted into a wooden pillar. At the churning end was fitted a four beatered wooden piece 9" in height and 4" in diameter. Churning of curds was done in a drum-like container (iron barrel) tinned within and painted without, with a draincock provided at the bottom for draining off butter-milk and wash waters. It was kept closed by a wooden lid in two pieces to avoid splashing.

Experiment

In each of the experimental trials carried out under Parts I and II an identical batch of milk used in the deshi churn was used in the improved type. As the geared churn admitted of easy removal of butter-milk at the butter collecting stage, 2-3 trials were conducted in the efficiency of the new type of churn, using the standard curd process technique. When the butter had formed to the jowar grain size, the butter-milk was removed through the drain-cock and wash water was added and butter gently churned taking care not to over-work the butter granules. The yield of butter-fat with the improved churn and the deshi along with the quality of the butter is recorded in tables III and IV.

TABLE III

Comparative Efficiency of Geared Pole Paddle Churns by the Methods in Vogue

No. of Trials	Total Milk Lbs.		% of Butter Fat obtained in Ghee after original Butter Fat in Milk		% Butter Fat Loss of the Original		Churning Efficiency measured in% of more yield of ghee A—B (7—6) or (4—5)
	Improved (geared) A	Deshi (Pole Paddle) B	A	B	A	B	
1	2	3	4	5	6	7	8
1 (a)	20	20	82.10	67.2	17.9	32.8	14.90%
2 (b)	44	54	87.05	77.45	12.95	22.55	9.6
2 (c)	40	40	85.15	74.4	14.85	25.6	10.75
6 (d)	133	163	86.69	82.5	13.31	17.5	4.19

cf. Table I for corresponding details (Rural India, June, 1947)

TABLE IV

Comparative Efficiency of (A) & (B) churns in Standard Methods

No. of Trials	Total Milk lbs.		Butter Acidities %		% Butter fat Yielded of the original		% Butter fat loss of the original		Churning efficiency measured in % of more Yld. of Ghee (A–B) (4–5)	
1	(A) 2	(B) 3	(A) 4	(B) 5	(A) 6	(B) 7	(A) 8	(B) 9		
3	45	45	.055	.066	87.1	86.25	12.9	13.75	plus	0.85
4	60	60	.066	.074	86.9	87.9	13.1	12.10	minus	1.0
3	45	45	.058	.13	93.6	91.4	6.4	8.60	plus	2.2
1	15	15	.083	.14	83.0	73	17.0	27.00	plus	10
4	60	60	.150	.167	82.9	80.8	17.1	19.20	plus	2.1
8	120	90	.107	0.126	94.46	90	5.54	9.20	plus	3.66

cf. Table II for corresponding details (Rural India, June, 1947)

Discussion and Conclusion

It can be envisaged from tables III and IV that the geared rotary churn (A) yielded better results than the ordinary deshi churn (B) with alternating motions. However it is interesting to note that the marked difference in yields (vide Table III) observed with the country processes narrows down while working under standardised conditions (vide Table IV). While in the former case the efficiency of the gear churn (A) is 14 % or more than the deshi (B), under standard conditions of processing and souring the difference in yield is only about 5% or even much too low. The drain from top to the bottom of the barrel of the improved churn admits of easy removal of buttermilk without disturbing top layer of butter granules at the butter collecting stage. The addition of wash water after draining the butter-milk and gentle churning (avoiding churning of butter granules) brings about satisfactory washing of butter without markedly affecting its texture. The quality of the washed butter also improves its acidity coming down to half that of the unwashed butter from the deshi churn. The acidity of the washed samples of butter being considerably low after two washings, admits of longer storage as butter. The ghee prepared from such a butter has a very low acidity conducive to a longer keeping quality. The free butter granules that may escape in butter-milk and wash waters could also be trapped while draining through muslin and hair sieve at the drain trap and effectively re-claimed.

The improved gear churn used in our studies was not a perfect one. Though it still leaves several points (such as the change in the shape of the container, hanging type of churn rod instead of a holding type, provision of a fly-wheel, more adjustable fixing of the gear frame, introduction of oar types of beaters etc., to be added to or improved upon, yet as it is, it has decisive advantages over the deshi churn from the points of view of ease, time, efficiency and cleanliness of churning.

Under standard conditions of processing and souring with the improved technique of churning and the use of the gear type churn, it is possible to get yields as high as 93 % to 94 % by deshi curd process of ghee manufacture. Improvements on the line suggested will also lead to high grade butter and ghee with longer storage and edible properties. Properly soured cream could also be churned equally if not more efficiently by this standardised churn under standardised conditions, to deal with large scale milk surpluses on collective or co-operative basis.

EFFECTS OF COW AGE ON FAT PERCENTAGE

The age of a cow has some influence on the composition of its milk: the most important change with advancing years is a slight—but noticeable—decrease in the percentage of fat. This opinion is held by Mr. O. St J. Kent, Chief Dairy Research Officer of the Department of Agriculture in Victoria (Australia). He maintains that a young animal showing 5% fat will decline to about 4.5% if it continues producing up to 14 years of age.

Farmers should not hope for improvement in butter fat production in an unpromising heifer.

The effect of age on fat test should not, of course, be confused with the effect of age on milk production. There is normally a gradual increase in the quantity of milk produced up till the eighth or ninth year after which production declines.

Orchard Layout

As far as possible, make the garden area square or rectangular in shape, as it will help in easier planting and management of the garden.

Select a central spot, as far as possible, for the well. It should be on a higher level from where water can reach all the extremities of the garden. In fact, the well forms the 'control' point of the whole orchard. It is suggested by various authorities that the levels of the field should be taken to find the highest spot and to sink the well there. The roads, the blocks of fruit trees etc., should accordingly be planned.

Before planting, mark out the garden in different blocks. Provide approach roads to all these blocks. The main roads should be ten feet wide so that carts can easily ply on them. Make cross roads at right angles to these.

Reserve a small nursery area near the garden house. The garden house should not be far from the entrance. A small "chauki" and a rest house may also be provided.

Drainage

Though not very much cared for by the average Indian gardener, drainage is a very important item of fruit gardening. 'Drainage consists in the withdrawing of water from the soil when all the benefit needed has been derived from it.' Under natural conditions, except in exceptionally well-drained soil, the rain water, specially when the rains are heavy and continuous, gets accumulated in the field. Besides, there are other factors too that keep more than necessary water in the soil. This cools down the soil and makes the medium injurious for the good growth of plants. These conditions are remedied by artificial drainage. Incidentally artificial drainage also improves alkaline soils and other soils containing a high percentage of injurious salts. It lessens chances of hibernating soil borne diseases and insects. It, at the same time by improving the water absorption capacity of the soil, improves the soil tilth and prevents soil erosion.

Ordinarily open drains laid at proper places and so planned as to remove the accumulating water are effective. But these are clumsy and troublesome to be kept clean. A little carelessness in cleaning them will make them home of injurious insects. One great advantage of these is that they are cheap to lay out.

Closed underground drains are the best. These are costly but economical in the long run as once laid down, they do not need any attention whatsoever. They consist of porus earthen pipes or pieces of stones, brickbats etc., trenched at a depth of 2 to 2½ feet. The earthen pipes are laid over a bottom layer of small pieces of stones. The pipes should be in a regular gradient. Over the pipes too, small pieces of stones, broken tiles etc., are spread and the drain covered up to the surface with earth. A well-drained sandy earth should be used. When stones are used for laying the drains, fill up to half the depth of the drains with the pieces of stones. Use bigger pieces first and give a top layer of pebbles. Brush wood, straw or cane trash may be spread over these and the drains covered with sandy soil. Good drains can also be had by filling the trench completely with the pieces of stones. Use bigger ones at the bottom and smaller ones above them. The top layer should be of pebbles. All the drains are so laid that they have full influence over the whole field. They are joined generally to a common outlet which for attaining good

results must always be kept clear. The underground drains require skilled manipulation; hence it is always better to ask for the help of the Provincial Agricultural Engineer in the matter.

Fencing

It is very essential to have proper protection of the garden from stray cattle and later, when in bearing, from thieves. Fencing may be of thorny brush-wood (generally Babul twigs are used) or of bamboo tatties etc. The best and permanent fencing, of course, is of wire netting. Barbed wire fencing is effective against cattle but not man. Woven wire fencing with barbed wire on top is the best.

A green hedge is liked by some growers but is not good because it requires irrigation for the first two years, does not always keep to shape and grow vigorously; gaps are common. It also occupies more space and its roots are liable to compete with those of the fruit trees. Insects too find a good hibernating place in it. However, if desired, strong growing thorny plants such as, Ingadulcis, babul, cactus, agave, etc., may be tried.

To avoid entrance of stray cattle in the orchard the following simple method recommended by Capt. W. Sherrard Smith, M.C., may be adopted:—"Trench 3 feet deep and 4 feet wide on the boundary line. The earth from the trench is thrown up on the inner side to form a mound 4 feet wide at the base and 2 feet wide at the top. The height of such a mound would be about 5 feet on the inside and 8 feet on the outside (including the depth of the trench). A protection of this nature will require at least one annual cleaning and repairs after the monsoon."

Wind-break

In orchards proper provision of a wind-break is very essential. There are many regions which get continuous seasonal wind blasts whereas, almost in all parts of the country *looh*, the northwestern wind of April and May is prevalent. It is very important to provide a wind belt on the direction from which these seasonal strong winds blow. The main idea is to check the force of the blast, so that it may not harm the crop by destroying the flowers and tender fruits and breaking down the heavy fruit laden branches. Wind breaks also provide protection against frost and other weather severity. They also protect the orchard from infection of wind borne diseases. To achieve this and also to ward off the attack of insects it is advisable to have the wind breaks planted even a year earlier than the actual plantation.

A good general plan is to plant a hedge of any tall quick growing trees all round the garden at about 15 feet away from the first row of fruit trees. *Sheori* and dwarf bamboo provide a good wind break for a small orchard. For a big fruit garden it is necessary on its western side to plant a double row of tall growing trees like eucalyptus, Jamun, Shesham, Desi mangoes etc. The rows should be 20 feet apart and the trees placed alternately at 10 feet apart. The inner line of the trees must be 15 to 20 feet away from the first row of fruit trees. The wind break so grown will provide full protection over a distance four times its height and partial protection upto over 8 times. Thus wind-breaks will be required at every 200 feet or so.

In order to achieve strong vigorous growth of the wind-break, pits for planting the trees should be prepared in summer and filled with a mixture of manure and soil. Planting may be done in June, July. It will also be necessary to attend to irrigating, weeding, mulching, seasonal manuring etc., in the early stages to achieve healthy rapid growth.

A trench of about 3 feet deep should be dug in the middle of the first row of fruit trees and the inner line of the wind-break. The trench in all cases should be about 10 feet away from the fruit trees. This will avoid encroaching of the roots of wind-break on the main plantation. This is an important item of the management of wind break and must never be overlooked.

GROW MORE FRUITS II

ESSENTIALS OF FRUIT GARDENING

By: B. L. Choudhri, *Agricultural Officer, Patna State.*

(Continued from June, 1947)

Soil Suitable for Orchard

THE soil is the most important factor for the success of an orchard. Many gardens have failed only because of improper soil selection. Failure can be easily avoided by giving full attention to the selection of soil. The individual soil requirements of different fruit plants will be given while dealing with their cultivation, but as a guiding principle it can safely be stated that any medium type of soil rich in plant nutrients and not water-logged can be selected. The Department of Agriculture, Bombay, recommends, "well-drained plots with a medium black soil or loam or sandy loam of a depth of at least three feet and with a soft murum or porus sub-soil." Soil liable to water-logging should never be selected for the establishment of an orchard. It may, however, be noted that different varieties of fruits can be grown on a wide variety of soil types. Only extreme types need be avoided because very heavy soils are difficult to handle as they get water-logged badly, whereas, on the other hand, sandy soils lack in humus and do not hold moisture well and so are likely to be infertile.

Any field which is capable of producing a good agricultural crop or is found to grow luxuriant trees and has soil about 4 to 6 feet deep—the deeper the better—is fit for an orchard. Depth of the soil is always a very important factor for healthy plant growth.

Importance of Sub-soil

For orchards surface soil alone is not of importance. Many gardens are reported to have failed after a few years of planting, because due consideration to the nature of sub-soil was not given. It is always better to dig a few test pits at different places in the area selected for fruit gardening to ascertain the type of sub-soil and to make sure of the presence or otherwise of undesirable elements like a clayey impervious sub-soil or a hard pan and a constant water table within a few feet of the surface. The test pits need not be more than 6 to 8 feet deep as the major feeding roots of fruit trees are generally restricted to this depth.

Improvement of Soil

A fruit grower may have a field of heavy or light sandy soil. Both these types require improvement before being put under fruit cultivation. It is possible within certain limit to make them suitable for raising an orchard. Clayey soil can be improved by adding sand to it. Use of coal, ash and fine cinders is also helpful. Their use in excess should not be made. Likewise improvement can be effected in sandy soils by the liberal use of clay and leafmould. A heavy dose of cowdung manure or compost is also recommended. The horse dung manure is useful for heavy soils. Liming to a limited extent may be resorted to so as to sweeten sour soils. Underground or open drains correct water-logging conditions of the soil.

Friable and an open condition of the soil is very essential for healthy growth of plants. The condition is attained by cultivating it at the correct time. Working the soil, when it is wet, spoils its tilth.

Full precaution for this must be taken specially for heavy soils. At the same time a little delay in the operation makes it difficult to work the soil as it is liable to crack and clod on drying.

Effect of Climate

Consideration of climatic factors is of greater importance than those of soil for planting an orchard. Trees suited to one climate cannot successfully be grown in another. According to their natural habit, fruit trees may be grown in temperate, tropical and sub-tropical zones. There are, of course, some trees on the margins of these zones which will grow in both types of climate, e. g., mangoes are both tropical and sub-tropical.

Prevalence of high temperature in summer and severe cold or frost in winter are limiting factors in fruit cultivation. Control of these is difficult and invariably not possible, hence due study of these factors must be made and the fruit trees should be selected accordingly.

Site of an Orchard

The orchard as far as possible, should be on a high lying area where there is no fear of the accumulation of rain water. "A fruit garden", according to S. Camerson, "should be fully exposed to sun-light. The land should be fairly good to start with and should be entirely free of roots from the adjacent trees or crops. A sufficient water-supply must be available at a higher level to irrigate the whole of the garden. The land must be levelled or terraced. Very steep land is undesirable, and in very cold situations a southern aspect is best."

A place not very far away from the market is an asset to the fruit grower. At the same time the selection of a field very close to a big town or market place is not good because of the high charges of labour and other sundry requirements for the garden. Any place from where garden produce can easily and cheaply be sent to the market should be selected. Nearness to a railway station, facilities of booking by rail or motor etc., should be considered.

Selection of Fruits

Only those fruit trees which grow successfully in the locality should be selected. It is not economical to go in for novelties. It is not advisable for growers on the plains to import plants grown on the hills. Inspite of care and attention, a fruit tree suited for high elevation will fail to bear on the plains. Before making a final selection it is better to visit a few gardens in the vicinity and to study the conditions of the plants grown. Follow the simple rule of growing only those fruit plants which are giving good results in these gardens.

A fruit garden should consist of one kind of fruit only, such as orange, mango, etc. Or it may be a mixed one in which case two or three kinds of fruit trees may be grown in separate blocks. The advantage of a mixed fruit garden is that there is no off season and hence the labour is fully kept engaged all the year round. At the same time receipts are obtained at all the seasons, as by a judicious planting plan the grower can harvest fruits in all seasons.

Blocks of different kinds of fruit trees that bear in the same season should be close to one another. This will facilitate proper supervision of work as watching of bearing trees and easier gardening operations like manuring, irrigation, etc. It may also be mentioned that in a mixed garden the taller types of plants should be grown towards the north and dwarf varieties towards the south.

SMALL FARMERS IN U. S. A.

By: M. Pevsner

THERE were six million farmers in the U. S. A. in 1940. Of these, two-thirds owned small and medium farms and one-third large ones. The latter accounted for more than 80% of the marketable produce of agriculture, half of which was produced by a small number of farms at the top—10% of all the farms.

According to the agricultural census of January 1, 1945, 2% of the total number of farms owned 40% of the entire agricultural area, whereas the small farms constituted 50% of the total number of farms and covered only 11% of agricultural land. The process of enlargement of farms in the U. S. A. has been intensified during the last decade. The average size of a farm in the U. S. A. has increased from 155 acres in 1935 to 195 in 1945, i. e. by 40 acres. The total number of farms decreased in 1935-45 period by almost a million and this decrease was entirely a result of the elimination of small producers.

The crisis in the thirties struck a heavy blow at American cotton and brought about big changes in the cotton growing region—in the south. It accelerated the elimination of the widespread system of share cropping in this region. Over 300,000 small tenant farmers were driven off the land. In the 1940–45 period the number of tenant-farmers in the U. S. A. declined by a further 500,000 (from 2,400,000 in 1940 to 1,900,000 in 1945) mainly on account of small farmers in the south.

Transformation of the south, where mechanisation of cotton cultivation is extending, entails the elimination of the majority of small farmers. The May 1946 issue of *Harper's Magazine* stated that from a million to a million and a half small farmers' families, i. e., from five to eight million of the farming population (reckoning five persons per family) would lose their homes and livelihood during the next 10–20 years.

In its comments on the preliminary results of the 1945 census, the Economic Bureau of the Department of Agriculture of the U.S.A. emphasises the rapid growth of large farms exceeding 1,000 acres and medium farms ranging in size from 100 to 180 acres. The Bureau points out that this enlargement of farms is mainly a result of the big farms absorbing the smaller ones, since there are almost no vacant lands in the country.

The farming population of the U.S.A. diminished by five million persons during the 1940-1945 period.

In the thirties the ruined farmers had nowhere to go. The towns were themselves suffering from mass unemployment and could not receive them. Urban workers in those years, on the other hand, were streaming to the farms in search of work and food, thereby intensifying the agrarian over-population. By the beginning of 1940 there were from 2,500,000 to 2,750,000 unemployed on the farms, according to a statement of the *New York Times* in its issue of May 17, 1940.

The war opened an outlet for the surplus population that had been thronging the farms. The war presented huge demands for American foodstuffs and brought colossal profits to agriculture. The average annual sales of agricultural commodities rose from 8,500 million dollars in the 1935-1939 period to 19,500 millon dollars in the 1942- 1945 period.

In a statement to the Agricultural Committee of the House of Representatives, Secretary of Agriculture, Anderson, stated that U.S.A. agriculture prospers only in wartime which, he said, was disgraceful. *(New York Times, 27-1-47).*

It was not, however, all the farmers that were prospering; it was only the big farmers who enriched themselves during the war.

Even such an organ of big capital as "Business Week", in its issue of November 2, 1946 had to admit that only a few farmers made immense profits, whereas the income of the majority of the farmers was very small. According to the figures of that journal 50% of the farmers occounted in 1942 for only 18% of the total income derived from agriculture.

In 1939, the American writer Steinbeck in his book, *Grapes of Wrath*, depicts the grievous fate of the family of the small farmer Joad who had been driven from the land. That book created a sensation and called the attention of the American public to the tragedy of ruined farmers. Despite the enrichment of America during the years of the war the position of these farmers is just as sad now as it was then. None knows exactly how many farmers, driven from their land, have become homeless tramps. The magazine *American Mercury* in its October, 1946 issue estimates the number of vagrant labourers at four million persons. These native Americans have become second-rate people, outcasts, says the magazine. Though living in society, they are isolated from it; they are deprived of doctors, hospitals, libraries, schools, of any benefits and of the right to vote. The mortality among the women and children is very high. In the spring of 1946 there were 1,50,000 children tramping together with their parents. These children do not attend school, since owing to their constant migrations they hopelessly lag behind their coevals. Illiteracy and destitution are the constant concomitants of the families dislodged from their habitations and replenish the army of vagrant labourers.

Rich planters prefer to employ not local but vagrant labourers for harvesting the crop. The latter they can pay less and exploit more easily. In Texas and in Florida, where there are many vagrant Negroes, the planters declare: "Give the Negro barely enough to eat to keep him strong, and just enough clothes to hide his nakedness; otherwise he'll develop the big head and get the idea he is anybody's equal", (*The American Mercury*, October, 1946).

Vagrant labourers are also preferred because after the harvest they must immediately move on. The police see to it that they do. Constant vagrancy deprives them of the right to vote, since according to the laws of the U.S.A. a residential qualification is necessary for the exercise of this right.

An investigation of the housing conditions of 70,000 persons working on the harvesting of sugar-beet and potatoes in Colorado, Wyoming and Montana has revealed the appalling destitution of workers in a country "with the highest standard of living in the world." Of these people 10,000 used ditch-water for drinking purposes and 33,000 persons had no place to wash in. They lived in railway coaches, sheds, hovels, tents, etc. "We were shocked at the deplorable health and sanitary conditions under which the cotton pickers were living. I have personally never seen such terrible conditions as we encountered in Arizona", said a representative of the Children's Bureau, United States Department of Labour, on February 27, 1946.

An army of more than 600,000 tramps picking berries for cakes, jelly, ice-cream and other delicacies for the table of the rich, huddle in groves by the roadside. Asked why she was not in school, a ten-year-old girl looked surprised and answered calmly: "Oh, we are not people. We're berry pickers". There can be no better illustration of the condition of life of these outcasts.

The process of the gradual enlargement of the farms in the U.S.A. has been going on for years and decades. In the U.S.A., the richest country in the world, this process is paid for by a heavy social price: the impoverishment, pauperization and degradation of the broad masses of farmers.

—*Social Welfare*

HOW TO IMPROVE THE LOCAL BREEDS OF POULTRY IN THE COUNTRYSIDE

By: K. G. Phalke, B. Sc. Ag. (*Animal Husbandry & Dairying*)

THE problem of full employment of the rural population for the whole year has been engaging the attention both of Government and public leaders who have sincere interest in the economic development of the poverty stricken masses. Several cottage industries subsidiary to Agriculture have been suggested and poultry farming finds a prominent place among them. There is no branch of Agriculture that needs as little investment and at the same time returns as good a profit for the farmer as poultry farming. If properly conducted it is one of the most profitable and useful of occupations. Countries like America are making huge profits in poultry farming and there is no reason why India, once the original home of the poultry, should not do likewise provided she adopts the same systematic and scientific methods of poultry breeding which America has adopted.

Poultry keeping in India is in the hands of the illiterate and the ignorant people mostly Muslims, Christians and lower caste Hindus like Sweepers, Chamars etc. It is conducted more as a hobby than as a business. Most people without experience in poultry keeping generally carry on this work. All factors that influence the productive ability of the flock such as right feeding, proper housing and selective breeding are ignored. It is no surprise then that the condition of the poultry bred and reared under such conditions should remain unsatisfactory. A thorough knowledge of the fundamental principles of breeding care, housing, feeding, and incubation is necessary if poultry keeping is to be profitable.

With a view, therefore, for the wide and general improvement of poultry and poultry products, a few poultry farms have recently been opened in certain parts of the country, e.g., in U.P. One is at Eta, the other is at Lucknow and the third is at Allahabad, Agriculture Institute, Naini.

The poultry farms can provide stud cocks of the improved breeds free of cost in the villages. They will provide facilities of training young men in the best of methods dealing with poultry so that this most paying cottage industry can be set on good footing throughout the land.

Poultry keeping is not a new industry in India and it is common to find small flocks of poultry kept by families in almost every village and town. The average Indian looks down upon the hen as an unclean animal that eats all sorts of dirty things which it converts into eggs. They are not properly and regularly fed with the most nutritive things containing lot of first class protein, but are allowed to roam about at will, picking up whatever food they can get in the yard. They are the most neglected animals; they are not properly housed and handled. Their breeding is left to chance and goes on in a very haphazard and primitive way. As a result of these conditions the fowls that we see in India to-day are undersized, their laying capacity averaging not more than 50 to 60 eggs per year; the size of an egg is also very small.

In some of the western countries

tremendous improvement has been made on the fowl and it is common to find hens laying over 200 eggs per year. Some of their best hens lay even 300 eggs per year. I trust that the day is not far distant when prejudice against poultry will vanish and our leaders will promote the poultry industry which to-day is looked upon with contempt.

In order to raise the standard of poultry it is necessary to have a thorough knowledge of the methods of their feeding, housing, incubation, brooding, breeding and rearing. Ventilation for fresh air, sufficient amount of exercise, good wholesome food, correct methods of feeding, are vital things and supply of information to the illiterates as to how these can be best accomplished is the main object of the poultry farms established by Government. Success is assured by making a thorough mastery of the fundamental principles upon which the industry is built. A living can be made from poultry if one knows how to do it.

For lack of space, I shall deal here only with the problem of breeding which is the most important head in this subject.

Because of proverbial poverty in the country, particularly in the countryside, it is difficult to advise people to start poultry by buying hens of improved breed which are very costly. The Government must establish poultry farms which can provide stud cocks free of cost to the villagers for breeding purpose with the condition that the villagers would caponise all their local cocks and cockerels. These caponised cocks called capons are useful in several ways.

When the cockerel is of 6 to 8 weeks, it should be caponised. After caponisation the capon develops vigorously in body and becomes useful for meat.

When the cockerel is caponised in younger age, the male hormones are suppressed and the female hormones get the chance to develop fully. So the capon begins to behave as a female fowl. It can then be used for hatching the eggs and rearing the chickens as a fostrate mother. This is practiced in Western countries; and in India I have seen it on the farms such as Agricultural Institute, Naini, Izatnagar, Eta and Lucknow.

The utility of doing this is that we save the hens to continue laying the eggs and not to waste their time in hatching the eggs and rearing the chickens.

If we advocate this in the villages and the caponisation is carried on by the veterinary doctors and the poultry farm managers free of cost, I am sure, there will be pure improved breed everywhere within a period of 4 to 5 years. How it could be done is explained below.

With the experience, it has been found that in India W.L. horn and R. I. red are good acclimatised foreign breeds. The former is a very good layer of eggs and the latter is a heavy breed and so is very nice for meat purpose. At present, we want hens which are good layers of eggs and so we must distribute cocks of W. L. H. breed in the villages. We must go personally and inspect the flocks and select the heavy and healthy desi hens for the breeding purpose and instruct the villagers to keep those hens separate and remove the bad ones slowly and slowly.

These selected heavy and vigorous hens should be mated with those supplied improved cocks. There will be no trouble of desi local cocks or cockerels when the work of caponization is carried on side by side.

The eggs which we will get from the hens after mating with the pure cocks should be hatched or incubated and the chickens should be reared well in good atmosphere. The cockerels and pullets should be separated when they are of four weeks and the cockerels must be caponized and the pullets will be ready to lay eggs at about 6 to 7 months of age, provided they are healthy. This is the first generation. In this generation we get half the blood of pure breed and so it is a cross. Then these pullets be allowed to move with the pure supplied cocks. Get the eggs from these pullets and get hatched or incubated and reared the chickens in good healthy atmosphere; get the pullets separated as previously done and allow them to move with the pure supplied cocks. This is second generation : we get 75% of W. L. H. blood and 25% of Desi blood. So this same practice must be carried till we get the 8th generation. At all times we must use the pure cocks to mate with successive generation pullets.

It the 8th generation we will get the chickens which will have the blood of desi hen only 25/64% and pure cock's blood 99 $\frac{39}{64}$%.

This will be a nearly pure breed which can have all the strains of the pure breed.

SILK-WORM REARING IN KASHMIR

By : Girdharilal Sapru

Past History

HISTORY takes us as far back as the time of Sultan Zain-Ul-Abdin, commonly known as Badshah among the natives, as the probable time from which the silk industry exists in Kashmir. From the antique words like "Tula Bagh", and the like we come to know that even in those hoary days, attention was paid to the Nursery plantation of mulberry trees, which rear the silk-worms. The industry afterwards for some time saw the darkest days of its existence in Kashmir partly due to the chequered annals of the place and partly for the insanitary conditions observed in silk-worm rearing. Towards the beginning of the twentieth century the age of revival came with respect to this industry, and the rejuvenation of the same took place on a firm and consolidated footing. The repulsed industry then received its early and tender nursing in its infancy in the days of Maharaja Ranbir Singhji, the grandfather of the present ruler. Finally, the era of prosperity and progress dawned in the year 1892, when the Sericulture Department of the state was established on the report of Sir Thomas Wardle of Leek, who saw and predicted the good and promising fortune of the industry in this land.

Present State

With the establishment of the Sericulture Department, the industry prospered by leaps and bounds till it reached a certain state after which it began to sing a swan's song. In the beginning the authorities concerned felt that the Queen of textiles was scaling the heights of prosperity, but who thought that behind the glorious prospect of the manufacture lurked the grim future of its possible

decline. Inspite of the best efforts on the part of authorities, such as new plantation of mulberry trees and making the tree as a Royal one (i.e. nobody can cut the tree without the permission of the authorities) and so many other steps, the gusto and the vigour which it displayed in the beginning came down. The industry continued in a lower key. The number of trees planted in different years is as follows :—

Year	No. of Trees	Year	No. of Trees
1933	51.451	1938	76.000
1934	61,840	1939	81,871
1935	70,132	1940	84,460
1936	84,980	1941	84,871
1937	75,685	1942	91,000

The above figures show that on the whole the progress in the plantations of trees is a healthy one. This industry was in its hayday in (1966-70) when it created a record production of 44 seers of cocoons from an ounce of seed. After this the industry was hampered to some extent. The unmitigated efforts of Kashmir state can be easily imagined by the amount of seed distributed in the year 1942, which amounted to 45,000 ounces. But the corresponding production of cocoons is rather poor and discouraging, i.e., one ounce of seed yields about 24 seers of cocoons. Allowing for the loss of leaves at the rapacious hands of nature, it has been calculated that about 37½ thousand ounces of seed could be reared. The feasible prospect of the industry has been only too deceptive, and the comparison can be struck between Kashmir and Mysore states, though the latter is but only of one third area of Kashmir, and produces five times as much silk as the former.

Peasant's Role

The pre-requisites of silk-worm rearing are (a) Seed (b) Leaf (c) Space and (d) Labour. The labour and accommodation for silk-worm rearing are provided by the rural population. According to the census of 1941, the total population of rural areas of Kashmir State is 33,06,283. Keeping this population in view it has been calculated that the rural areas are capable of producing 600,000 ounces of silkworms as against the present quantity of 50,000 ounces of silkworms annually. The majority of rearers are those kissans or karkuns who are commonly known as tenants and who do not possess any land or tree of their own, but make use of the leaves of others' trees, which is permissible under state regulations.

The advent of Spring in Kashmir, sends a call throughout the length and breadth of the rural country, for it is in this time of the year that both the forsaken land and silk-worm industry call the peasant back to his active work. The state distributes the disease free silk seed among the villagers during this season. Great care is taken in seeing the soundness and the purity of the seed since any negligence at this time results in the wholesale loss of labour and money in the advanced stage, when the disease breaks out in the fifth moult of the worm. The leaves of 15 full-grown trees suffice the worms of one ounce of seed. The space which reaches a maximum of 75 sq. yards varies with the different ages of the worm, and is provided by the farmer's poor cottage. Through the first three moults only one man can look after the worms, but in the last two moults he may require assistance. The incubation period starts at the time when the mulberry trees sprout forth young leaves, which provide food for the worms.

Incubation

The seed is sprinkled rather in a small room well-ventilated, and whose temperature can be varied. The temperature of the room has to be risen according to the age of the worms till it reaches a maximum of 75° F. The temperature is varied by two degrees each day. The temperature is maintained at 75 degrees for some days, till the seed changes its colour from purple to a lighter one. Poor farmer can keep the room warm in no other way than by placing fire-pots in the room. Three days after the change of colour the eggs begin to hatch. During the incubation period care should be taken to spread the seed in thin layers to ensure good out-turn.

Bengal and large scale migration of population from these areas have further accentuated it. As a result of the disturbances in the Punjab and uprooting of millions of people, it is estimated 25 per cent of the crops are lost in that area. Food officials, who lately met in a conference in Delhi state that the yield of the next rice crop will be about 83 per cent. With an over-all shortage of about 25 per cent in the yield of the next crop, the food prospect that faces us is the grimmest. It is giving real headache to those responsible for food administration of the country. Dr. Rajendra Prasad, India's Food Minister, has, in a recent statement, reviewed the present food situation of the country and said:—

"The food situation in the country is a rather sombre one and we are in for some very difficult time. Owing to insufficient grain stocks under the control of the Government, not only must the country be prepared for intermittent breakdowns of rationing in different parts of the country, but also accept drastic cuts in the existing rations.

"October and November were the most difficult months that we have had to get through. It is possible that even before the beginning of November, in some places, rationing may breakdown, but I am hoping that we shall get through.

"Some danger is also apprehended that the next Kharif Crop may not be fully harvested and owing to vast movement of populations, there may be a short fall in the Rabi Sowings.

"The food problem in India will not be solved until internal production is increased considerably and rice production in the major pre-war rice exporting countries is rehabilitated.

"The time has come when the Provinces and States must depend more and more on their own increased production to feed their own people. Our new slogan should be self-sufficiency in food for each area. Till that is achieved, regimentation in food seems to be the only alternative to wide-spread chaos on the Food Front".

Increased production of food within the country itself and regional self-sufficiency in food for each area are the solutions offered by the Food Minister to solve the serious food problem of the country. Last year about this time, the same advice was tendered by the Food Minister to solve the identical food situation and the adoption of a five year plan to increase internal production of food was announced. But at the end of one year of food administration by the National Government, rather than increased production and improvement in the food situation, the country is faced with the gloomy prospect of 25 per cent less than normal production and the food situation is more serious now than what it was last year about this time of the year. This does not speak well in favour of our food administration and the people have a right to demand definite results of the policy adopted by the administration last year in the matter of increasing internal production and ensuring regional self-sufficiency in deficit areas.

In the matter of producing tangible results of the working of food administration in these two vital respects during the last year, we regret to note that the statement of the Food Minister is completely silent. What administrative measures are being adopted by the department to ensure self-sufficiency in each area in

future, one fails to find any practical plan being unfolded by the Food Minister in the course of his statement.

It does not become of a Public Minister to feed people on good wishes and pious sentiments. An administrator has to speak in the language of action, plans and programmes. The slogan of self-sufficiency may be a creditable performance to a platform speaker, but it does no credit to a responsible administrator. He is required to unfold his plans and policies and carry conviction to his people how the sweet-sounding slogan of self-sufficiency is going to be translated into practical achievement through the well-planned action of the Government.

The food situation in the country has become so serious that it has claimed consideration from Gandhiji down to every thoughtful leader of public opinion. The solution offered by Gandhiji is based on the principles of self-help and self-denial. Quoting America's example of self-denial to feed hungry Europe, Gandhiji advises his countrymen to practice self-denial in the matter of food and save their fellow-men from starvation and death. In one of his post-prayer speeches at Delhi, he is reported to have said :—

"The slightest dependence on outside help is likely to deflect us from trying to the fullest extent our immense internal possibilities in the shape of utilizing every inch of arable land for growing crops for daily food in the place of growing money crops. We must reclaim waste land which is capable of being placed under immediate cultivation.

"Hindus observe a fast or a semi-fast every eleventh day per fortnight. Muslims and others are not prohibited from denying themselves especially when it is for the sake of the starving millions. If the whole nation realized the beauty of this partial self-denial India would more than cover the deficit caused by the voluntary deprivation of foreign aid.

"If America would deny herself for the sake of hungry Europe, should we fail to do this little act of self-denial for ourselves? If many must die of starvation, let us at least earn the credit of having done our best in the way of self-help, which ennobles a nation."

In order to combat food-famine in an effective way weekly or fortnightly fasts advocated by Gandhiji have their place in saving food but only to a small extent The major solution of the problem however lies along three directions:—(1) Production, (2) Procurement, and (3) Foreign imports.

Last year, it was expected of the then Interim National Government that it would adopt special measures to increase internal food production of the country. A whole year has passed and the dismal picture that is now presented is that the country's food production this year is about 25% less than that of a normal year. On the vital food production front, rather than any improvement in the situation there is definite setback. In the absence of any well-planned production drive on the part of the Government one apprehends how this food catastrophe will be averted in years to come.

The procurement drive of the Government too has not been very effective in provinces and states. In its wake have appeared numerous mal-practices and anti-social activities of hoarding, smuggling, and black-marketing. The Government efforts to check these mal-practices have not so far proved very effective and strong and rigorous legislative

Hatching

One day after the hatching has set in the seed is covered by either perforated paper or fine gauzy cloth. Over the cover small leaves or sprouts of the mulberry tree are sprinkled. The worms in search of food pass through the perforations to the leaves and settle on them. These leaves bearing the worms are taken and kept aloof. Each day's instalment is kept aloof and is called as levee. The worms of the first day are served with one meal only. On the second day they are given two so that the worms of the first day have received three meals as compared with the two meals of the worms of the second day. On the third day the worms of third levee are served twice a day while the worms of the second levee four times and the worms of the first levee three times a day. After thus equating the number of meals for some time, six meals are served per day to the worms. This process facilitates the coming together of worms for the first moult.

The Silk-worm

Silk-worm enjoys a life of 36 days during which it changes its skin four times or so to say passes through four ages, each extending a period of:—First 5 Days, Second 4 Days, Third 6 Days, Fourth 7 Days and Fifth 10 Days.

The maximum amount of leaf consumed by the worms of one ounce of seed, in the last stage rises to an amount of 700 lbs. It is calculated that one ounce of seed will give about 30,000 worms. The area over which the worms are to hold sway in different periods and ages of life are, First age 1 sq. yard, Second 4 sq. yards, Third 11 sq. yards, Fourth 30 sq. yards and Fifth 75 sq. yards.

Since whole of the poor cottage of a farmer cannot be placed at the disposal of the silk-worms, therefore generally the space is provided by a number of wooden trays supported on frame work. The leaves required for the day's consumption are cut in the morning and then stored in a well-ventilated and airy room. The leaves are cut in strips and then served to the worms. The width of the leaf increases from one-eighth to the full leaf as the age increases to maturity.

First Age:—At the end of the first age the worm leaves back the moult along with the black hair on it. The hair are replaced by a grey down. The worms at the beginning of the second age depict considerable improvement in dimensions. The worms move about restlessly in search of food in this age.

Second Age:—Three days after the first moult the worms prepare for the second moult. This is the shortest age in the life of the worm. At the end of this age the worm takes up the form which it retains for the rest of its life.

Third Age:—Four meals a day are served to the worms in this age. But the food is generally regularised according to the appetite of the worms. Any dust, blown as a result of sweeping is harmful to the worms.

Foth Age:—On the 7th day all the the worms pass into the fourth age. The appetite of worms is greatly whetted in this age and so excess of food should be served. The worms are exposed to different diseases in this age.

Fifth Age:—The worms are starved for 24 hours, till they have completed the fourth moult. This age is very critical for a worm and therefore, requires vigilant care of the rearer. Seven days after the fourth moult the appetite diminishes. The worms become transparent from the rings at the head which is a healthy signs of cocoon rearing. On the following day worms stop eating and roam about with their heads raised, to find a suitable place for cocoon weaving. After having made the cocoons they die in the very cocoon. The farmers afterwards sell the cocoons to the state silk factory, at a fixed rate laid down by the state itself.

SECRETARIAT
15 NOV 1947
GOVERNMEN

THE RURAL INDIA

Vol. X No. 11.] NOVEMBER, 1947 [Whole No. 106

"Salvation of India lies in Cottages"

—*Mahatma Gandhi*

GRAVE FOOD CRISIS

INDIA is passing through a series of Crisis. We have hardly turned the corner in communal warfare when we are faced with grave food situation in the country. Since the Bengal food-famine of 1943, the food situation in the country has increasingly deteriorated year after year. It is 4 years now that starvation diet has become the fate of the people as normal condition of their physical existence. With all propagandist talk of 'Grow More Food' campaign, the Country's food production has registered diminished returns all these years. An alarming situation has now reached on the food-front when the Government have not enough of food stocks with them to continue the already reduced quota of ration to cover the period between now and the next Kharif crop.

Conditions of world food shortage have put the severest limitations on our imports from abroad. We are hardly getting 3% of our food supplies from outside at the cost of heavy financial loss to Indian Exchequer. And the chances of this limited supply are further restricted due to world shortage of food. The grim spectacle that faces this country as also the rest of the world is that large masses of people both here as well as in other parts of the Globe must starve and perish for want of food in the near future. The world including India is face to face with the grimmest tragedy yet enacted in the history of the world when with all scientific inventions of large-scale production large mass of humanity all over the world is destined to perish for want of food—the most elementary need of man. No less an authority on food than Sir, John Boyd Orr, Director General of Food and Agricultural Organisation, in one of his recent addresses to the United Nations Economic Committee brought home to that body the disastrous consequences of the world shortage of food and observed:

"The number of people in Europe and Asia, who will die from direct or indirect effects of the food shortage in the next 12 months will be greater than the number killed in the fighting or in the bombing in any year of the war.

"The Crisis would not end with 1948 harvest, but the shortage would continue for many years. Because of the anticipated increase in population food production would need to be increased 110 per cent in the next 25 years for the population of the world".

India's food situation has been precarious for a long time. Communal upheavals in the Punjab, Bihar and

measures are urgently called for to combat these wide-spread evils. The support of the producers should be enlisted by the Government by intensive propaganda and more sympathetic and efficient working of the Government machinery.

In the matter of increased food-supply the food administration has mainly concentrated itself on foreign imports. This has been too costly an affair and then the imports have not been adequate to meet the country's demand. We cannot altogether do away with foreign imports at a critical time of food shortage like the present, but it is sound commonsense that we should increasingly shift our emphasis from foreign imports to internal production.

The main problem on the food-front is internal production. It is through plentiful supply of food and other amenities of life that the masses will be made to understand what freedom has meant to them. In the absence of this concrete proof of Swaraj for the masses, a feeling of suppressed discontent against administration is already discernible among our people. Food Administration should take serious note of this growing volume of public discontent and adopt earliest measures to launch well-planned production drive in the country. A sincere patriot and constructive leader of the eminence of Shri J. C. Kumarappa has rightly given vent of growing public feeling in the country on the problem of food, when in the course of his article in a recent issue of 'Harijan', he puts a few partinent questions to be answered by our Central and Provincial Ministers. He writes :

"Our measuring rod for the achievements of our Provincial and Central Ministers must be the good bestowed on the masses. In whichever direction we turn—food, clothing or shelter—the conditions are definitely worse to-day than they were a year ago. Starvation and death face many.

"The public is entitled to know what has been done to relieve the food situation. Rationing and controls have played havoc and have helped to create black-markets which are deepening in their hue every day. Money crops are merrily going on increasing. Then how much fresh land has been brought under food crops ? What efforts have been made to conserve available food from damage by bad storage and by milling" ?

These are not the sentiments of a disgruntled or hostile critic, but of a profound thinker and eminent constructive worker of the country. We only hope and pray that Dr. Rajendra Prasad and the Department of Food Administration under him may find themselves prepared to answer these very relevant questions which are agitating the public mind of the country. Let it not be said of the first Food Administration of Free India that the present crisis found them wanting !

NOTES

MADRAS PRIME MINISTER ON RURAL RECONSTRUCTION

THE Prime Minister of Madras, Shri O. P. Ramaswamy Reddiar, who also holds the portfolio of Rural Development for the Madras Province, met with 43 Firka Development Officers, who have gathered there in a special refresher camp. Our friend, Shri Ralph Richard Keithahn, has sent to us the report of the advice tendered by Shri Ramaswamy Reddiar to the Firka Officers which may be read with profit by the Field Workers in the cause of Rural Reconstruction.

"I have desired for the last 6 months to meet and discuss with you our common programme and problems. I have made special efforts to know about your work. I realise that our work has proceeded more slowly than anyone of us desired and that Government has not given to you the desired cooperation. However, you have done much inspite of these difficulties. I know that it has been your consecration that has helped you to do as much as you have. However, much more still remains to be done.

"We have set apart one crore of rupees for this special firka development. However, at least 15 crores are needed. What then is our solution ? It is the solution of the past when villages have built their own temples, tanks and common wells. We must solicit the cooperative efforts of the villagers. Then only can we care for our tanks and common wells as is necessary. I realise that today we take money in taxes from the villages and spend it very largely in our city. For example, in this province we spend over one crore of rupees on 20,000 miles of central roads. However, for those 17,000 miles of village roads we spend only 3 lakhs of rupees. That is the way we are caring for rural needs and so I find fault with myself. I know this must change. Your task is to help the villagers and the local Government officials to understand these facts for even this small amount of money given to the villager often lapses because it is not used by the local officials.

"I would also like to speak to you regarding Sanitation. To-day we are spending in the Madras Presidency 2 crores of rupees—1 crore for sanitation and one crore for Medical work. But look at our village hospitals ! We are spending Rs. 6 to 700 to distribute Rs. 400 on medicine. How little medical help is really given ! This must be all changed. But there are many difficulties in the way. Our files increase while our work decreases. Today we are spending three times as much money in administration than was spent before the war. I know of no Government spending 60% of its funds for civil administration alone. Many of us are giving our attention to increases of salaries, allowances and establishment and as a result have no time for the actual work. Public opinion must soon change this situation helping us to make proper adjustments and you are to help us to develop this public opinion. Look at our village sanitation. When we enter a village foul smells greet us. The money spent is insufficient. But where government has failed, you, with the help of voluntary organisations, may solve the problem. This is not only a health but also an economic problem. It is said that the excreta of 1000 people can fertilise 250 acres. Today this great resource is largely wasted. It is for you to educate and guide our people in the use of our great fertiliser resources in the village itself.

"Our programme is to bring electricity to all tirkas. Today that is impossible because we depend on foreign machinery which is not available. Actually we have ordered Rs. 2 crores of such machinery from the United States of America but while we are waiting, 15,000 people have already requested pumping installations. Thus again the Government is failing us in a very important village development scheme.

"Moreover, 60% of the present available electricity is being used in our cities; 8% alone actually goes to the village as such. Here again we face great difficulties, for in the nationalisation of electricity we are paying according to a past agreement for electrical plants at present inflation values. So selfish interests seek large profits and the poor village tax payer suffers. Drastic legislation is necessary to remedy this serious situation.

"I might also speak to you about our village industries programme. However, you have many friends who are present to help you at that point. And I must say that we welcome all private, spontaneous effort along this line. In fact when the Government moves slowly such private effort may move very rapidly. It is also a good tonic for government effort. And government will help those who help themselves. Such work will also help us to eliminate unnecessary overhead expenditure.

"Finally, I want to speak to you about education: Again our expenditure for elementary education has increased from 1½ crores in 1929 to 4½ crores. And yet we have less schools by over 1000. Moreover I would say there is a 50% wastage in our elementary education expenditure. Many schools are understaffed. Teachers are often absent. This is partly due to inspectors who are sleeping.

"Thus if there is so much waste and no more money for the extension of education what hope is there for the future? Our hope is in the Wardha scheme of education whereby we work for self-sufficiency and for vital learning through creative labour. I believe the future of education of India depends on the spread of this system. It is based on the great fundamentals of truth which are common to all religions. It stresses the importance of non-violence which is at the centre of of our culture. It stresses character development rather than the profit motive, and in that spirit you will also work. You are *Karma Yogis* carrying on selfless work. I pray that you have come to your Government positions in this spirit of dedication. Yours are many difficulties. The Government may come or go. You must be the unchanging servants. So I pray for you strength and inspiration that you persist as devoted workers until success has come."

PREMIER KHER ON THE DEVELOPMENT OF CHARACTER AND DISCIPLINE AMONG STUDENTS

Addressing the Convocation of the Madras University during the month, the Hon'ble Shri B. G. Kher, Prime Minister of Bombay, stressed the need of the development of Character and Discipline among University students. He emphasised the necessity of developing social conscience and proper behaviour among our educated young men and deplored absence of discipline and sense of responsibility which is so much in evidence in them. Freedom, which we have achieved after so much labour and sacrifice, can only be retained, if the educated youths of the country cultivate higher sense of their duties rather than fight for their rights, advised Shri Kher and said :—

"The greatest need in modern India to-day is the development of character in such a way that students will learn to *conduct* themselves nobly and decently in all their social relationships and to choose those modes of behaviour which are in harmony with the ideals of human dignity. In stressing this aspect I am anxious to draw your attention pointedly to the fact that the chief object of general education is neither the increase of knowledge nor of skill nor even the attainment of what may be described as 'passive' virtue. It is rather to enable people to *do* better, to *behave* better, to use their increasing knowledge and skill in the service of the common good. Today, we know far more than our ancestors did and we possess infinitely greater power than they ever did. But, if I may repeat a well-known but imperfectly appreciated truism, our moral standards and our social conscience have failed to keep pace with our growing scientific knowledge and our technical advance. The result is the great disparity between what man *can* do to fill his life with order and happiness and beauty and what he has *actually* done to make it dull and miserable, frustrated and unsafe. Every increase in scientific power and control enables man to dominate the destiny of more and more of his fellowmen, to exploit not only the resources of nature but also the labour and the lives of his fellows for his own selfish purposes. This constitutes a great danger for the welfare of the world, for if education fails to quicken social conscience and strengthen the sense of human solidarity, destruction and exploitation rather than co-operation and service will become the order of the day.

"Universities must dedicate themselves to educating young men and women into the duties of democratic citizenship and develop in them the qualities of discipline, responsibility and co-operation without which the social organism cannot be properly cemented. I am deeply pained to observe the general lack of discipline, a disinclination to do hard work and to live a hard life as also the desire for premature leadership which the modern student world exhibits. See what is happening in the United Provinces. Unless we can quicken the social conscience of students and make them more mindful of their duties than of their rights, there is the danger that the conflicts and dissensions, which disfigure our national life today, may gain greater momentum and the freedom that we have achieved with so much labour and sacrifice may be jeopardised."

The qualities of character and discipline were at no time more in demand in this country than they are to-day, when the moral standard of the community is greatly shaken by the prevalence of 'anti-social evils of corruption and black-marketing and there is marked deterioration in the efficiency and general tone of the administration. The present moral anarchy and widespread confusion in both political and economic spheres presents a challenge to the youth—the future leaders of the community—to rise equal to the occasion and give proof of their high character and sense of discipline in establishing order and efficiency out of the present chaotic conditions obtaining in the country.

CHRISTIAN RURAL FELLOWSHIP

Shri Ralph Richard Keithahn sends this short account of rural activities of this organisation, which may be read with profit.

"The Christian Rural Fellowship is a World Organisation with an India

section formed recently at Allahabad with Dr. Sudhir Roy of Moga as President and Dr. A. T. Mosher of Allahabad as Secretary. The first Regional Conference was held on October 10–12, 1947 at the Agricultural Institute, Katpadi. Such rural workers as Dr. Mosher, Mr. J. J. DeValois, V. E. Andrews of Alwaye Settlement, Joseph John of "Deenabandhupuram", Ramakrishnapet, John Rose of Pasumalai and 40 others gathered to discuss their problems, plans and programmes. It was agreed that the Government would carry on the major programmes of village uplift but that private groups might well make unique pioneering contributions; that the Indian Christian rather than the missionary must give the leadership to such contribution. The Christian Rural Fellowship believes in the potential richness of rural life and would promote its spiritual and moral as well as agricultural values.

"It was decided to have another such Conference in 1948. Meanwhile, the Rev. A. Samuel of Pasumalai will act as correspondent for S. India. The full report of the Conference will be available through Dr. A.T. Mosher, Agricultural College, Allahabad.

"On Saturday evening the American Arcot Mission and the staff and students of the Katpadi Agricultural Institute gave a very interesting pageant depicting the 25 year's development of this farm centre."

PANDIT JAWAHARLAL NEHRU ON NATIONAL PRODUCTION

"Two months ago, many of us had a number of schemes in our minds for solving economic problems, huge schemes of construction, etc. These schemes were suddenly suspended because of the situation that arose in the Punjab and later to some extent, in Delhi. Yet, essentially those are the major problems of India and unless we set about solving them fairly soon, there will be greater upsets all over the country.

"I am anxious that Government should begin dealing with these problems in a basic, fundamental way and if we do not do so, I fear the consequences for our people will be bad.

"India's economic crisis was no simpler or easier than that of the U. K. which was being met very bravely by the Government and people of England though it might not be quite so obvious to many persons. Unless we deal with it effectively and fairly rapidly we may be caught up in all manner of difficulties which affect millions of people. These Punjab disturbances have affected us in many ways. They have reduced our production both of food and other commodities. They have entailed us a loss I do not know of how many million hours of work.

"The main problem of India is to increase production."

RURAL DEVELOPMENT AND STOPPING OF UNNECESSARY LITIGATION

By: V. Narasimha Murthy,
Mysore Judicial Service

Introduction

One of the several causes that have contributed to the poverty of the Indian ryots is their desire to involve themselves in unnecessary Civil Litigation on very trivial and frivolous matters. This naturally results in much unnecessary waste of time, energy and money of not only of our ryots in the villages but also of the State. It is possible to stop or minimise unnecessary litigation in the rural areas.

Remedial Measures

(1) The first remedy that I suggest for the elimination of unnecessary litigation is the trial of the suits in the very village where the subject matter of the suit is situated or where the dispute has arisen. The Munsiff or the Civil Judge must go to the very villages to try the suit as the witnesses who come to a place at a distance away from the village may tell a lie. But they will be afraid to swear to falsehood in their very village lest they should be branded as liars by their fellowmen with whom they have to deal every day. When parties are certain that their witnesses will not tell a lie either for love or for money, then they will hesitate to file false and frivolous suits.

(2) Secondly, much unnecessary litigation will be stopped, if villagers find out that they cannot get witnesses to speak to a falsehood. I am inclined to believe that some of the witnesses who come to court have no compunction to swear falsely, because the swearing ceremony is not solemnly done in our Courts of Law. If the witnesses are sworn with the fear of God and the Divine retribution for perjury, then they will hesitate to come to Courts and swear to a falsehood. Many of these false and frivolous suits are filed in Courts because there will be witnesses who have no compunction to swear to an untruth either for love or for money available. If our Courts of Law can instil a Divine fear regarding the consequences of perjury, then very few false and frivolous suits will come to Courts. I advocate, therefore, that when suits are tried in the very villages, there should be a court building which should breathe the atmosphere of a temple of justice. The witness-box which will be kept there must bear a sanctified appearance and the very look of the witness-box should instil a great fear to a perjurer. The Court House must be adorned with pictures of the Hindu Gods, Jesus Christ and the emblem of Mohammadans which they use on holy places along with the National Flag. The witnesses when they get into the witness-box, must stand before the Court and bow down to the Court solemnly and then swearing ceremony must take place even though it may involve five minutes for each witness. If the witness is a Hindu he must take hold of a book like 'Bhagavadgeetha' and if he is a Mohammadan he must take the holy 'Koran' and if he is a Christian he must take the 'Bible' and kiss it. They must all in their own vernacular language devoutly and solemnly state, "In the presence of the Almighty God I tell the truth, the whole truth and nothing but the truth; so help me God". If this swearing ceremony is strictly observed, then it will instil real Divine fear in the witnesses and no witness

will dare tell a lie and particularly so in the presence of his fellowmen. I personally believe this will be an effective measure to stop or minimise false and frivolous litigation among people.

(3) Another reason why false and frivolous litigations are coming up in India will have to be traced to the writers of documents in India who are not only inexperienced in drafting and conveyancing, but also are unscrupulous. I know cases wherein the document writers write several deeds of the same land to several persons perhaps on the same day knowing full well that somebody else has already purchased the very land. They have no compunction at all to write such documents and allow the matters to be fought out in Civil Courts and put the parties to a great deal of trouble and loss. In order to remedy this, I learn that there is a move on the part of the Government of Madras to start a system of licensing to the document writers prescribing a minimum qualification to them. I would suggest that as there are many lawyers who are not having enough work in our country, they may well take up to drafting and conveyancing in the rural parts. The Government must by legislation enact that no document of whatever nature it may be, shall be registered or admitted in evidence in Courts of Law, unless it is drafted or countersigned by a licensed legal practitioner of the Province or the State concerned. No legal practitioner will countenance any fraudulent act on the part of anybody and when the document is written or countersigned by him, he will be answerable under the Legal Practitioners' Act or Bar Councils' Act if he is a party to any fraud. Incidentally this gives enough work to the lawyers and also will minimise the work of the Court. I will go a step further in recommending that only lawyers should be permitted to sit for a test in drafting and conveyancing and should they come out successful, they must be given licenses to write documents or to countersign them. They may establish their offices in the village centres. Even negotiable instruments in the rural areas must be got written or countersigned by such legal practitioners. That will be a most effective check on fraudulent transfers and fraudulent and frivolous litigations.

(4) I also recommend that there should be a legislative enactment regarding 'Benami' transactions. I know that many suits are being filed under the guise of 'Benami' transactions though they will all be frivolous. There should be an enactment to the effect that no 'Benami' transactions shall be recognised by a Court of Law unless the 'Benami' transaction is also supported by a document executed by the 'Benamidar' in favour of the real beneficiary to the effect that the transaction is only a 'Benami' one. Such a document, as already stated by me, should be countersigned or written by legal practitioner holding a license for drafting and conveyancing.

(5) Another source of speculative suits is the Law that has developed in our State regarding the Hindu Law on Debts. It is high time that the Hindu Law on Debts should be codified to be in conformity with the sense of natural justice, equity and good conscience. As it is now, the proof of legal necessity and binding nature of the debts is thrown on the alienee. I think that speculative suits by minors to get the alienations made by their father or grandfather set aside will be minimised if in all cases the burden of proof of want of legal necessity and benefit is thrown on the minors or the persons questioning any particular alienation by their father or grandfather. If Hindu Law on Debts is codified, it will minimise many frivolous and speculative suits.

Conclusion

If all these remedial measures are adopted, then I think much fraudulent and frivolous litigation will be minimised and the village ryots and farmers will save much waste of time, money and energy and also the time of the Court. Education and moral propaganda should instil a sort of fear among the villagers that it is a great sin to perjure in a Court of law. Party factions are the real source of all frivolous and false litigations. It is the primary duty of every Rural Development Officer to see that such factions are nipped in the bud or patched up by all possible means. It is only by means of education and moral propaganda that such party factions which are the great curse of all our villages should cease to exist and the energy, money and time thus saved can be utilised for productive purposes. Then only there will be peace and plenty in our land.

CATTLE IN INDIA

DEVELOPMENT FOR DUAL-PURPOSES

By: H. J. Makhijani

THE Hon'ble Dr. Rajendra Prasad, Minister for Food and Agriculture in India, in his inaugural address at the Sixth All India Cattle Show, Delhi, on the 10th February 1947, stressed the importance of developing Indian cattle for dual-purposes in the following words: "India, in the words of Mr. R. A. Pepperall, is not in a position, nor is there an immediate likelihood of conditions changing, to admit the luxury of maintaining separate types of animals for milk and for draught. Therefore dependence must continue to be placed on a dual purposes kind of animals, the males of which are capable of meeting the agricultural and transport needs of the country whilst at the same time the females can be expected to yield reasonable quantities of milk. ...The present policy of the Government is to increase the number of good dairy cows and to maintain the quality of good work breeds while developing to the full what potentialities for milk production these work breeds possess. That they possess these potentialities has been proved in the case of Kankrej, Bachur, Gaolao and Hallikar breeds. The dairy breeds will be developed in the fresh milk zones around towns, but that must be done without endangering the quality of the Country's work bullocks, which, it must be kept in mind, form the overwhelmingly most important livestock of the country. ...Thus there are some breeds which are good milkers but whose males are not efficient workers. Even amongst those that are good for work, different varieties have been developed in the past. Thus there is a variety which can do hard work, drag heavy ploughs and carts with heavy loads but cannot go fast. On the other hand there are breeds which run fast but cannot work hard or carry heavy loads. These qualities were developed centuries ago as a result of judicious and selective

breeding and perhaps feeding and there is no reason why we should not be able to develop breeds to suit our purpose viz: the dual purpose of giving reasonable supply of milk and good bullock for work purposes''. In order that we are able to develop our breeds on these lines, it is necessary to study the present position first.

The Indian Cattle Breeds

India is fortunate to have over 25 well defined breeds of cattle, each one suited to the locality in which it has developed. A list of the existing breeds with a brief description of their potentialities for work and milch qualities is given below :

Breed	Habitat	Draught qualities of bullocks.	Milking Potentialities of cows.
1. Amrit Mahal	Mysore State.	Active and fast trotting; one of the best known draught breeds.	Poor milkers; a few cows have given lactation yields of over 2,000 lbs.
2. Alambadi	Hilly tract of Salem and Coimbatore districts of Madras Province.	Active and hardy; in good demand for cart and mhote work.	Poor milkers.
3. Bachur	Bachur and Koilpur parganas of Sitamarhi district in Bihar.	Good work animals.	Fair milkers under good management; average lactation 800-1000 lbs; potential dual type.
4. Bargur	Bargur hills of Coimbatore dist. of Madras Province.	For spirit, power of endurance and speed in trotting they are said to be unsurpassed	Poor milkers.
5. Dangi	Ahmednagar and Nasik districts of Bombay Province.	Medium slow draft animal, extremely hardy.	Poor milkers.
6. Deoni	Nizam's Dominion and adjoining areas.	Good work animals for heavy cultivation.	Fair milkers; average performance 1,500 lbs; potential dual type.
7. Gir	Kathiawar.	Heavy, powerful but medium-paced in movement.	Good milkers; average performance 3,000 lbs; under well managed conditions; individual records over 7,000 lbs.
8. Gaolao	Wardha and Chindwara districts of Central Provinces.	Fairly good workers.	Fair milkers; average performance 2,000 lbs; potential dual type.

Breed	Habitat	Draught qualities of bullocks	Milking Potentialities of cows.
9. Hallikar	Mysore State.	Good, fast trotting.	Fair milkers; potential dual type.
10. Hariana	Rohtak, Hissar, Karnal and Gurgaon districts of East Punjab and Delhi Province.	Good work animals particularly for rapid ploughing and road transport.	Good milkers; average performance under well managed conditions 3,000 lbs., individual records over 8,000 lbs.
11. Hissar	Hissar District of East Punjab.	Good workers both for field operations and hauling loads; noted for stamina.	Moderate milkers; individual records over 3,000 lbs.; potential dual-type.
12. Kangyam	Coimbatore District of Madras.	Strong, active workers.	Poor milkers.
13. Kankrej	North Gujrat of Bombay Presidency and parts of Kathiawar.	Fast and powerful; reputed to be the best bullock.	Fairly good milkers; average lactation performance 2,500 lbs; individual records over 5,000 lbs.
14. Kenwariya or Kenkatha	Bundelkhand Agency and parts of U. P.	Small, sturdy, fairly powerful; good for light work.	Poor milkers.
15. Kherigarh	Kheri district of U. P.	Good for light work.	Poor milkers.
16. Khilari	Southern portion of Bombay Province.	Fast, powerful and hardy.	Poor milkers.
17. Krishna-Valley	Southern portion of Bombay Province and Hyderabad State.	Powerful; useful for slow and heavy work.	Fair milkers; individual records over 3,000 lbs.; potential dual type.
18. Malvi	Malwa tract of Central India and Parts of C. P.	Popular for medium and light draught both in the field and on the road.	Poor milkers; individual records over 3,000 lbs. Potential dual type.
19. Mewati or Kosi	Alwar and Bharatpur States.	Good for heavy work.	Fair milkers; potential dual type.
20. Nagore	Jodhpur State	Powerful trotting type for fast field and road work.	Fairly good milkers; individual records over 4,000 lbs.
21. Nimar	Valley of Narbada river in Central India.	Strong and active; good for field and road work.	Fairly good milkers; individual record over 3,000 lbs.

Breed	Habitat	Draught qualities of bullocks.	Milking Potentialities of cows
22. Ongole	Nellore and Guntur districts of Madras Presidency.	Powerful, suitable for heavy field or cart work; generally not used for fast work.	Good average milkers; average performance 2,000 lbs.; individual records over 5,000 lbs.
23. Ponwar	Pilibhit and Kheri districts of U. P.	Fairly good.	Poor milkers.
24. Rath	N. W. of Alwar State and parts of adjoining States.	Good both for field and road work.	Fair milkers; potential type.
25. Siri	Darjeeling hills and in Sikkim and Bhutan (U. P.)	Eagerly sought after for cart purposes owing to their size and strength.	Fair milkers; do very well under stall-fed conditions.

Besides these, India has a few well-bred herds of the following famous breeds of cattle, whose habitat, on account of the partitioning of the Country, now lies in the Pakistan :

Breed	Habitat	Draught qualities of bullocks.	Milking potentialities of cows.
1. Red Sindhi or Karachi Red	Karachi district and parts of other adjoining districts in Sind.	Medium-sized, compact, medium-paced and steady worker; suitable for fairly heavy field operations and hauling loads.	Good milkers; average lactation performance 3,500 lbs.; individual records over 10,000 lbs.
2. Sahiwal or Montgomery	Montgomery and adjoining districts of West Punjab.	Useful for slow heavy work.	Good milkers; average performance 3,500 lbs.
3. Tharparkar	Tharparkar district in Sind and adjoining areas of Jodhpur State and Cutch State.	Good workers of medium weight; useful for plough and carting.	Good milkers; average performance 3,000 lbs.; individual records over 8,000 lbs.

Expert Opinion

There are three different schools of thought on this subject of breeding cattle for dual-purposes. One school advocates developing separate breeds for milch and draught characteristics, on the plea that development of a breed would be quicker when breeding for one character, either milk or draught, than when breeding for combination of both. According to Col. Sir A. Olver (Agri. & L. S., Vol. 6, p. 384, 1936) ".....there is likely to be a constant drag on the wheels of progress unless a definite policy is adopted, of breeding milking and working types separately". The other school is in favour of developing

specialised breeds as well as dual purpose breeds; milch breeds for commercial dairy farming, draught breeds for specialised transport and heavy farming operations and dual-purpose breeds for average farming conditions. The Royal Commission on Agriculture in India (1928, p. 225) have said that they "do not share the view that dual-purpose breeding should continue to be the sole aim of those who are endeavouring to improve the cattle in India regardless of the tract"; and according to Sir Datar Singh (Harijan Vol. X, p. 191) ".....in India, as in all other cattle breeding countries, there is enough room for development of distinct types as well as dual-purpose cattle." The third school advocates development of all breeds for dual-purpose utility. Mr. W. Smith (Isa Tweed's Cow Keeping in India, 1920) has strongly advocated that ".....what we must produce in this country is an animal, the female of which will produce an abundant supply of rich milk, while the male can efficiently assist its owner in the cultivation of soil." Mr. R. A. Pepperall was also of the same view.

Developing Milch Quality

While the expert opinion differs on the question of developing cattle for dual purposes, it is almost unanimous as regards the possibility and advisability of developing milch qualities in draught breeds to a reasonable extent. The Royal Commission on Agriculture (1928, p. 124) suggested that ".....the type of cow likely to suit the average cultivator would be one capable of rearing a strong calf and of supplying in addition 1,000 to 1,500 lbs. milk for household use." Dr. N. C. Wright in his Report on Development of Cattle and Dairy Industries in India (1937, p. 69) while advocating the desirability of increased milk production, has testified that ".....improvement can be looked for in the milking capacity of most breeds other than those purely draught types." Sir A. Olver (Agri. & L. S., VIII, p. 500, 1938) and Sir Datar Singh (loc. cit.) are of opinion that reasonable amounts of milk could be bred into recognised work breeds, without damage to their draught qualities. Prof. James Warner (Indian Farming, VII, pp. 195–7) tells us from the results obtained with the Tharparkar and Hariana breeds, that lactation yields upto 5,000–6,000 lbs. milk do not necessarily reduce the draught qualities of their male progeny.

The milk records of cattle in approved dairy farms in India, (ICAR. Misc. Bul. Nos. 18 & 36) show that quite a few Hariana cows have given lactation performances of over 6,000 lbs. milk, a few Kankrej cows over 4,000 lbs., Ongole cows over 3,000 lbs., Gir cows over 5,000 lbs., Amrit Mahal cows over 2,000 lbs., Deoni cows over 4,000 lbs., Malvi cows over 2,500 lbs., and Krishna Valley cows over 3,000 lbs. These individual performances indicate that by careful selection and management, milk production in all the breeds can be progressively increased and the breeds developed for dual-purpose utility.

Developing Draught Quality

It is doubtful if our work cattle have reached a stage of working efficiency beyond which they cannot go. The average working and milk production efficiency of even our best cattle breeds is indeed low. Besides, a very large number of our cattle are mixed-bred, non-descript and mongrel types. Therefore we are not only confronted with the problem of increasing milk production of our cattle but also developing their working capacity. The development for both, milk and draught, ought to go on together in all the breeds. It is quite

possible to raise the standard of efficiency at milk production and working capacity in all the breeds. The existence of good dual-purpose breeds viz. the Hariana, Kaukrej, Ongole, Nagore, and Gir indicate the possibility of development of most of our cattle breeds to a high standard of efficiency both at milk production and working capacity.

Different Requirements for Different Tracts

Environmental conditions and management factors have a profound effect on the development of cattle. Environmental factors viz: climate, soil, vegetation, topography, etc., determine the type of animal suited for a tract. The management factors determine the extent to which the resources of a tract could be utilised for improvement and development of its cattle. Different types of cattle suit different tracts. It is therefore, that we have so many different types, each one suited to the conditions under which it has developed.

Tracts of rich soil, regular water supply, abundant nutritious grasses, have led to the development of some of the heavier breeds viz: the Kankrej, Gir, Ongole. Tracts getting copious but rather irregular monsoons have led to the development of light and fast-trotting types viz; the Amrit Mahal, Khillari, Hallikar, and Kangyam breeds, for their ability to carry out field operations swiftly in the intervals between showers. In semi-desert areas of light soils and scanty rain, medium -sized and good-paced cattle viz: the Hariana, Hissar and Nagore breeds have developed for their ability to cultivate large areas of land with the first showers and to cover long distances in search for food in times of scarcity. Tract of heavy rainfall have led to the development of small-sized cattle, for their ability to thrive on poor quality grazing and work under marshy conditions; while hardier and lighter types have developed in the mountainous regions for their ability to thrive and work under those exposed conditions.

Local Cattle Best Suited

It has been shown that different tracts provide different conditions for cattle development and naturally therefore all breeds cannot be developed to the same standard of performance in milk production and working capacity. The most suited breed for any tract is the one belonging to it, and efforts could be made to improve it by selective breeding and good management. Good management implies systematic breeding, rational feeding, proper housing, disease control and putting the animals to the fullest use. Any breed can be appreciably developed, reasonably quickly, under good management. Artificial standards of management, which cannot be largely adopted viz: expensive sheds and their air-conditioning etc., use of patent feed mixtures, costly equipment, uncommon and expensive physiological treatments etc., would not prove of much use. Improvements in management practices by research on fodder crops and grasses, rational feeding, better utilisation of available feed resources, construction of cheap and good sheds, efficient disease control etc., which have the possibility of general adoption would be successful and have lasting effect.

Need For Development For Dual-Purpose

We have on the authority of Sir Datar Singh (Developing Village India, ICAR, 1946) that ".....from economic point of view the present position of cattle is anything but satisfactory." It needs no proving that the conditions for cattle breeding and rearing have progressively deteriorated and now despite the very large cattle population, we are experiencing shortages of both bullock power and milk. The Expert Cattle Committee of the Bombay Government (1940, p. 2) found that ".....the cattle of the province are on the whole not an economic proposition as over 80 percent can only be regarded as a drain on the country." Santokh Singh (Punjab Board of Economic Enquiry, No. 41, 1939, p. 48) quoting Darling agreed that "... a special survey in Rohtak (an important cattle breeding tract) suggests that 70 percent of the cows there do not pay for their upkeep." The state of things in other cattle breeding tracts is not far different. Certainly under these conditions, the cattle industry would not flourish. For development of the industry, it is imperative that the productive efficiency of cattle should be improved and their breeding and rearing be made profitable. Till this is achieved, there is likely to be further deterioration, and any breed, which cannot be raised to a level of productive efficiency where it can be profitable, it will necessarily decline and deteriorate. This is exactly what was happening to almost all our breeds for nearly a generation now. Except for a very few highly specialised breeds, no other breed can ever be profitable unless its both, cows and bullocks, are efficient and profitable producers.

The problem of increasing numbers and declining efficiency of our cattle leads to a number of anomalies. In our present social structure and desire for cattle protection, the population of cattle will necessarily increase from year to year; and certainly cattle are our assets. Unless each animal is sufficiently productive and is fully exploited, it would not be possible to establish the two-phase cycle viz: good management and increased production, necessary for maximum development.

Possible Performance Standards

It would indeed be very desirable to set out reasonable performance standards to be achieved for different breeds in respect of both the milk production and working capacity. It is quite easy to lay down the milk production standards for various breeds; but in absence of any convenient work measure system for bullocks, it is rather difficult to lay down working capacity standards for various breeds. However, the general standard will be that each breed should be able to meet the bullock power requirements of its tract. Till some work measure system is evolved, this shall be left for the present to the judgment of experienced breeders. The reasonable milk production standards for cattle breeds are given below :

Breeds.	Desired milk production.
Gir, Hariana, Kankrej, Nagore, Ongole.	3,500 lbs. per lactation.
Deoni, Gaolao, Malvi, Nimar.	3,000 ,, ,, ,,
Bachur, Hissar, Krishna Valley, Mewati, Rath.	2,500 ,, ,, ,,
Dangi, Hallikar, Kenkatha, Kherigarh, Siri.	2,000 ,, ,, ,,
Alambadi, Amrit Mahal, Bargur, Kangyam, Khillari, Ponwar.	1,500 ,, ,, ,,

PALM-CANDY FROM FAR SOUTH

By: S. V. Kamat,
All-India Village Industries Association, Wardha.

(Candy manufacture is a lucrative profession mainly practised in the southern coastal strip of Tiruchendur Taluka for centuries. In the third week of last July our Association had sent me to study the process and prevailing conditions. The following is a short note prepared out of my observations.)

AS I was a stranger to those parts and also to their language—Tamil, I had to get equipped with an interpreter. The ex-students of our Gram Sevak Vidyalaya have established in all parts of India. One Sri Kumarguruparan is working in the neighbouring village of Sankaranayinarkovil, in north Tinnevelley. He became my host, guide and mediator by turns. His resourcefulness is mainly responsible for enabling me to finish this survey in the unknown wilderness with comparative ease and brevity of time.

The season was nearing its end (it ended by the 15th August), so we had to hurry along by the Southern bus upto Tinnevelley and thence by the Easterly train to Tiruchendur. Here enquiries revealed that *UDANGUDI*, a coastal village 10 miles south of Tiruchendur, was the real centre. As that place was strange even to Kumarguruparan, we secured some credentials and proceeded by bus. The route lay through saline waste-lands thronged with palms (thickly with palmyras and sparsely with cocoanuts). The fields were unsuitable for cultivation as the sandy soil was incapable of retaining water on its surface for a long time. Though the wells are dug upto 25 ft. the water-level was not deeper 8-10 ft. this year. There is a narrow strip of cultivable land about 4 furlongs in breadth and ten miles in length, where betel leaves are grown with a negligible percentage of vegetables. To water these 'gardens', the labourers had to sweat over the "aitas" or hand-cranes whose mainstays are sawed out of the long and strong bark of the palmyras. Besides this the land is practically bereft of any edible crops except, of course, the few cocoanuts, the abundant palmyra fruit, juice, gur, and candy.

South India, especially Tinnevelley Dist., is endowed with innumerable palmyras. Then why, I asked, out of all these palmy places should this far off barren belt of land specialise in candy-making? As far as agricultural crops were concerned, it was a barren waste-land, that had deprived the population of their main employment—paddy cultivation. The unemployment that the geographical conditions had imposed seemed to be the main incentive to the ever devising human brain to probe deeper in the palm-gur industry and develop it into a refined art of candy manufacture. Palm-gur making was, and still is, a subsidiary vocation to agriculture in other parts. But here it had to be evolved into a wholetime profession. When Nature had forbidden Man to work as a simple farmer, he had to transform himself into an artisan—an adept in preparing crystaline candy.

Udangudi is a large village, consisting of more than 12 thousand inhabitants spread over the cultivable strip for two miles or so. Like all coastal territory here also the houses are not grouped together but are laid all along the roadside. There is a Group Congress Committee, which is being at present run by the youths of the '42 movement. We at first went to them and after some

persuasion the Joint Secretary acceded to our request to escort us to a nearby centre. But he seemed to wield little influence over the man in charge there. The Joint Secretary seemed to realise this shortcoming of his, and promptly began to seek some other person, and, fortunately he succeeded. We were able to see various centres, tappers, merchants...and went through all the practical processes of palmyra candy manufacture.

Out of all these various visits and interviews, the first was the worst. The manufactory was owned by an obtrusive, named Krishna Konar. Before he could fully bring forth his conservativeness into operation I was able to see some part of his shed and also some of the processes. He talked to us quite a lot, through which we could elicit much information. But as to any further 'sight-seeing' into his processes, he asserted his firm negation. Next morning we managed to secure the help of an influential Muslim merchant, on whose account Konar seemed to endure our second visit. After wailing out a long list of his sufferings he declared that the best way of introducing this industry in other provinces was by requisitioning the services of experts like him, who would *then* (and only then) be able to demonstrate the intricate technique of candy-making. Still I dared to ask him to take us around his 'refinery', to which he politely expressed his inability. I put forth all the patience that was in me to control my restlessness. ... And came away.

This ill-begun exploit gave us sufficient scope and material to brood over the prospect of my future study. The Congress workers seemed to be at a loss to find us any new avenue for our survey. We discretely prevailed upon the benevolence of the Muslim merchant, Moula Ali, who told us that once he was the host of honour to our boss Kumarappaji, when he had visited those parts. After hearing his eloquent repast in his Tamilised English, he bestowed us with another servant, who successfully steered us to the southern centres,

With the help of this and another guide we could visit five more candy centres. Before leaving the place I had handled all the feasible details, and as far as the preparation of candy was concerned I had a satisfactory experience. We could also interview some tappers and the only whole-sale candy merchant, who willingly supplied us all the necessary information. I summarise it in the next paras:—

The tapping season is from mid-May to mid-August. A candy maker usually employs three to six tappers. Nira the sweet palm-Juice is boiled into rab to the consistency of 108°C. At this point the boiling syrup from the earthen pots over the furnace is quickly laddled out in a palmyra-leaf container, through which it is carried to big earthen jars that are buried to the neck in sand in a nearly hut. The capacity of these storage pots, in which the rab crystalised into candy, was more than 80 lbs. It was necessary to fill the jars within two days, so as to ensure proper crystalisation. Therefore unless there was sufficient juice (say 300 lbs.) to produce at least 40 lbs. of rab candy making did not begin. Usually it started in the first week of June and stopped after two months.

As soon as the jar was full, some 8-10 tiny sticks of a local bush named Korandy were inserted in it vertically. Then it is let alone for the next 40 days, during

which crystals are formed around the Korandy-sticks and also on the inner surface of the jar, half of which is 'solidified' with fine crystals of minor dimensions. After taking out the bulging Korandis, the other crystals and the remaining syrup was emptied over an improvised 'filter'. (An inverted bottomless jar with a piece of perforated mat at its mouth). To collect the oozing molasses a pot was placed under. The crystals remained there for 24 hours, after which they were dried by spreading them on a mat.

Like all other Indian home industries here also it was practically impossible to isolate its economics from other intricacies. A close investigation and a persistent enquiry into what they termed as trifles, disclosed an inkling of the statistical data required for the purpose. On the strength of that I have based the following deductions.

A tapper taps 30-40 trees, drawing, on the average, at least 180–200 lbs. of Nira every day. The boiled rab of this would amount to 30–35 lbs. out of which approximately 8 lbs. of candy and 20 lbs. gur is produced. The former would fetch him something more than Rs. 4 and the latter Rs. 3. The total returns of the two months of candy manufacture would thus run over Rs. 400. This would be subsidised by another 100 rupees that are earned by the sale of gur that is produced before and after candy-making.

It was equally difficult to calculate the expenses. Besides food and some cloth the actual sum paid to the tappers varied from Rs. 150–200. There was a woman boiler for every three tappers and two other females to collect fuel, who were likewise fed, clothed and paid Rs. 30 each at the end of 3 months. All these wage-earners were temporary emigrants from the Cape Comorin area. To escape all these complications in estimating the actual costs I have hit upon the device of finding the seasonal income of a tapper family consisting of at least 3 males and 3 females. Then the money actually spent by them for the industry would be on tree-rent, shed, pots, lime, etc. All else would be their earning:—

Tree Rent Rs. 200/–, Earthen Vessels for Collecting & Boiling Rs. 100/–, Storage Jars Rs. 100/–, Sheds, Rs. 100/–, Sundry Rs. 100/–; TOTAL Rs. 600/–. Three tappers would produce candy and gur worth Rs. 1500/–. So the net remains to a family of 6 comes to Rs. 900/–at the end of three months. But the primary condition that enables them to earn this lucrative sum is that they, at least six of them, must put in a united effort and should be able to invest at least Rs. 1000/–; because for the first two months or so no returns could be expected as all the available juice was boiled and deposited for crystalisation. As the meagre resources of the average tapper could not amass this 'wealth' the well-to-do community (the 'petty bourgeouis' class) of the village had stepped in and this hire-and-lease system was established, in which the hard-working tappers received the least while the supervising overlords the most. Unless some genuine cooperative society financially helped them and pooled their solitary toil into suitable units ranging from three to eight tapper families, there seemed to be no other solution to improve their lot.

As stated in the beginning, ages ago, when Man first thought of establishing in this narrow coastal strip, Nature must have dictated him to discover this craft of candy-making. He prevailed upon the

crude materials that were then available, and then seems to have turned his back towards the further progress of civilisation during the later centuries. The industry is in the same old primitive condition. The slow unscientific boiling involves more fuel, labour and time. Moreover they are negligent enough to retain the lime which chars and embitters gur. The meagre resources, the strenuous effort the industry entailed, utter ignorance of the modern scientific devices and lack of will or wish to get them simplified to suit their environment, were some of the reasons why the industry had not made any headway.

However, I was content that all that was to be learnt in this industry was, after some effort, made available to me. The various observations had inculcated a fair amount of confidence so as to carry on an independent experiment of our own. Of course I had some technical doubts regarding the difference in the quality of juice, climate, soil etc. but all these could be cleared or ascertained only after the experiment was conducted.

MANURING OF POTATOES TO MEET INDIA'S SHORTAGE OF FOOD CROPS

By: C. P. Gupta and Girdhari Lall,
D. C. M. Chemical Works, Delhi.

POTATO is a crop that can be raised at-least twice a year and can give a yield of four to five hundred maunds an acre in the whole year. Compare this with cereals whose yield is anything from 20 to 30 maunds. It takes only three to four months for a potato crop to grow while cereals take six months. Besides this, the response to manuring is much more in the case of potatoes than in the cereals.

The result of this finding on our food problem can be seen from the fact that we can feed 25 to 50 people more per acre of our land by potato cultivation and can fight effectively with our present shortage of cereals. Our shortage of cereals becomes all the more acute now when Pakistan has declared that she cannot spare even an ounce of rice or wheat from its area. A surplus of 2 million tons has vanished altogether from our midst. Even if we try to bring all the available land in cultivation it cannot be done so quickly. We can, however, convert a cultivated field to yield a crop giving larger returns. Thus a case for Potato cultivation extensively is established. To cultivators it would not mean any loss. The cash return on the crop would be such as to pay back all their extra investment in the form of seed and manure. In South and specially in Nilgiris potato cultivation and its marketing has been highly developed. Besides this, large number of manurial firms are operating to meet with all the requirements of the manure in that area.

Looking to the manurial requirements of the potatoes we find that Nitrogen leads to vegetative growth, phosphate helps in grain and root formation and potash helps in photo-synthesis and checking susceptibility to disease. Potato

being a root crop, phosphate are bound to play an important role. In India various types of manures are obtained in the forms given here; nitrogen in the form of Ammonium Sulphate, Nitrate of Soda, various varieties of cakes and farm-yard manures; phosphorus as Super Phosphate and bone meal; Potassic manure as Sulphate of Potash, Muriate of Potash or Wood Ashes.

The manures can further be classified into organic and inorganic. Both have their own advantages. Whereas the organics, viz., cakes, bone-meal, compost or farm-yard manures etc., are of value for encouraging Bacterial life and improving physical conditions such as aeration, water retention etc. the inorganics are of value as suppliers of readily available plant food in a concentrated form.

Requirement of Plant Nnutrient for Potato Crop

An average good crop of Potatoes giving a yield of 200-250 maunds per acre removes from the soil 80-100 lbs. nitrogen, 35–40 lbs. phosphoric acid and 140–150 lbs. Potash. Based on these results in Northern India an addition of 80–120 lbs. of nitrogen, 35–60 lbs. of phosphoric acid is recommended. Field experiments, however, show that potashic fertilizers do not give any encouraging results.

Besides these nutrients this crop needs good aeration, suitable moisture, retentive capacity and neutral to slightly acidic re-action of the soil. This is achieved by growing the crop in a well drained light loam soil and supplying enough of quickly decomposing organic matter. It is a good policy to combine organic manures with quick acting fertilizers.

Manurial Scheme

Manurial schemes are being given below and even if we take an increase of 100 to 150 maunds per acre of potato crops due to manure we can make a profit of 250/- to Rs. 400/-per acre on each after paying for manures and keeping all other expenditures the same. Any one of these may be adopted.

1. Apply a mixed fertilizer consisting of organics and inorganics, e. g. cake, horn-meal, Sulphate of Ammonia and Super Phosphate in suitable proportion. This is done by applying Humophos No. 1 or No. 3 at 8–10 or 10-12 maunds respectively per acre at sowing. The manure is mixed with soil around each tuber. At the prevailing rates this will cost about Rs. 110/- to Rs. 130/- per acre.

2. Apply Castor cake at 12–15 maunds, farm-yard manure or compost at 5–6 tons or horn-meal at 4 maunds per acre at sowing except for farm-yard manure or compost which should be supplied 15–20 days earlier. Apply also Super at 2–3 cwts. per acre at sowing near the tuber and top dress 2 cwts. per acre Sulphate of Ammonia with earthing. This is estimated to cost Rs. 125/- to Rs. 150/- per acre.

3. Apply 6–8 maunds Humophos No. 2 at sowing, followed by 2½–3 cwts. Sulphate of Ammonia top dressed with earthings. This is recommended only where the soil is not very light and is rather well supplied with organic matter. It is likely to cost Rs. 105/- to Rs. 120/- per acre.

4. Apply manure mixture No. 3 or Super Phosphate at 3 cwts. per acre, followed by a top dressing of 2 cwts. Sulphate of Ammonia at earthing. This is recommended only where a large residue of field yard manure from the previous crop is available. This is estimated to cost Rs. 105/- to Rs. 120/- per acre.

The material content of the various manure mixtures mentioned above are as follows and are obtainable from the D. C. M. Chemical Works, P. O. Box No. 211, Delhi. Ammonia Sulphate is the I. C. I. product and the distribution of this is in the hands of the Government of various provinces.

	N	P_2O_5
1. Humo Phos No. 1 contains	10%	5%
2. ,, ,, ,, 2 ,,	4%	6%
3. ,, ,, ,, 3 ,,	8%	6%
4. Manure Mixture No. 3 ,,	3%	0·15%
5. Super Phosphate ,,		18%
6. Amm. Sulphate ,,	20.6%	16%

Soil Conditions, Rotations and Fertility

Potatoes are grown on a variety of soils varying from sandy loam to clay loam. The common rotations are potatoes-maize; potatoes-tobbaco-maize; potato, etc. etc. The dose of manures recommended in 1 to 3 above are for a light loam soils and for recuperative rotations the lower dose should be used and may even be further reduced. It should be borne in mind that though good yield may be obtained with the application of 4-6 cwts. of Sulphate of Ammonia for a year or two, gradually the crop quality becomes poor, disease resistance becomes low and the fertility declines a lot.

GROW MORE FRUITS III & IV

III PRELIMINARY CULTIVATION AND PLANTING
IV IRRIGATION AND MANURING

By: B. L. Choudhri

(Continued from October, 1947 Issue)

III

Reduce transpiration before planting

During transplanting, howsoever careful one may be, the plants get a setback due to the roots being partially cut and are unable to function immediately in the new medium. This means they cannot absorb the same amount of moisture which they were doing before transplanting. The leaves however, continue to work as normal and hence will transpire more than the newly planted tree can absorb. This upsets the balance and the plant wilts and the tender roots generally get killed. To avoid this the tips of the shoots should be prunned and the number of leaves reduced to minimum. This prunning may be done just before transplanting.

After care

The death of the new plants is often due to improper attention after planting. The most common mistake is that of irregular irrigation. Invariably too much or too little water is given to the young plants. As a rule give water soon after transplanting, a second irrigation to be given after 24 or 48 hours and then after 3 or 4 days. Thereafter, do not water till the soil gets dry upto a depth of 2 inches, but water as soon as this stage is reached. Allow the soil to get dry after every irrigation.

Weak and sickly plants should receive careful watering. They require less water than the healthy ones.

Keep the ground round the base of plants clean and mulched. No weeds should be allowed to grow at the cost of the young plants. Mulching not only

conserves the moisture but also provides proper aeration to the roots.

All young plants should be protected from the strong sun and the frost. All plants should be protected from the scorching sun of the first summer. This can be easily done by providing a grass '*Chapper*' above the plant at least a foot higher than the plant.

In places affected by frost, plants can be protected by making a bamboo 'Mandap' thatched with grass. Leave an opening towards the eastern side of it to permit light to reach the plant. To be quite sure of full ventilation tie all the three thatched sides about 4 to 6 inches above the ground level.

White Ants (Termities)

Beware of white ants. They are great enemies of young plants, doing damage unnoticed. The mischief is discovered only when it cannot be remedied. Very weak phenyle lotion and asaphoetida water serve as good deterrents. *Neem*-cake is another cheap, easily available and very effective deterrent for white ants. It is powdered and applied to the soil all round the plant upto a distance of 2 to 2½ feet from the stem according to the size of the plant and the prevalence of white ants. The cake powder, like a manure, should be thoroughly mixed with the soil. It may be noted that, it has manuring qualities too and will hence be doubly advantageous. The treatment will be effective at least for two months when if desired and found necessary it may be repeated. In places noted for troubles from the white-ants *Neem*-cake powder should be included in the soil and manure mixture filled in the pits prepared for plants. This will eliminate fears of white-ant attack. Of late D. D. T and Gammexane are also recommended for controlling white ants. They are very efficacious. The companies supplying them give direction to use them.

Tillage filler and cover crop

In the early life of an orchard while the trees are growing, there are large open space in between the young plants. There are some who believe that this land is not to be utilised for any crop and only that it should be kept clean by cultivation. This is wasteful as the open land becomes a great source of weeds which without any crop but themselves, tend to multiply very rapidly. Moreover no return is obtained from the land till the orchard is established.

Adequate use of filler or intercropping makes that orchard economic and a little thought and carefulness can even make this practice advantageous to the permanent orchard. This land can be used for:—

1. Intercropping with other fruit trees

OR

2. Growing vegetable or field crop.

Intercropping with fruit trees

Quick growing and early bearing fruit trees can be advantageously grown as fillers. These trees besides monetary returns provide opportunity to get experience in culture and marketing. Guava, Papaya, Banana, Phalsa, Pine-apples etc., are generally used as fillers. It is always better to use such fillers whose irrigation demands are not different to the main plants. Of course, if the fillers are kept well away from the permanent trees, irrigated and manured independently there is no fear of their being in any way harmful to the main crop. Care should, however, be taken to avoid trees that tend to cover and shade the main plants.

At the same time precaution must be taken not to allow the roots of the fillers to encroach upon those of the permanent trees. The fillers must be removed long before their branches touch those of the main trees. A definite programme of uprooting the fillers should be adopted. This may mean discarding excellent fruiting trees. But the temptation to keep the filler just for one year more is very harmful to the orchard.

Vegetable or field crops

Any low growing vegetable or field crops be grown during the early stages of the orchard. These must be planted well away from the plants so that the working animals do not damage the plants or the implement cut the roots. Bamboo tree guards wherever they are cheaply available can be used with advantage. Sweet-potato, Guar, turmeric, ginger, brinjals, chillies, onions, gram, pees, urid, mung and lakhori are generally grown.

Vegetables other than legumes are exhaustive crops and hence the soil fertility must be maintained by proper manuring. These crops should be irrigated in a manner that the fruit plants get water only when they need it.

Cover crops

These are beneficial to the orchard. *Sann* or any other leguminous quick growing crop may be used and ploughed in as green manure. This checks growth of weeds and adds humus and nitrogen to the soil.

Tillage

Keeping the orchard clean and mulched is very essential. When the trees are full grown and the intercropping is stopped give every year at least two ploughings,

(1) in the beginning of the rains, and
(2) at the close of it. This will burry all weeds into the soil and create a mulch. The cultivation should not be deep.

Mulch and its advantages

A mulch consists of breaking up the capillary connection between the soil and the air. It may be a natural earth mulch or an artificial one, achieved by using straw, paper etc. An earth mulch is created by tillage which makes the top soil loose and provides a layer of 2" to 4" of loose earth. This helps to conserve moisture by stopping the evaporation. The earth mulch to be effective requires frequent tillage during the growing season and after every irrigation or rains.

Treatment of Bahar

Those fruit trees which have more than one flowering seasons during the year require *Bahar* treatment so as to yield a crop from a definite *bahar* (flowering) only to suit the local seasonal market demands and availability of labour. In commercial fruit growing it is essential to concentrate upon regular seasonal *bahar* treatments to an orchard from the time the trees commence to fruit. Frequent change of *bahars* will result in the orchard not giving satisfactory response. The *bahar* treatment consists of resting the trees by withholding water before the natural flowering time for a period of 1½ to 2 months depending on the weather conditions and the nature of soil. If desired the small fibrous upper roots to a depth of 6" and within a radius of two feet from the stem, may be exposed. As a result the leaves turn yellow, shrivel and fall down. As soon as this condition is reached mix a requisite amount of manure to the soil, prune diseased, damaged and dried roots and branches and perfectly cover the exposed roots. Give first two light irrigations, followed by a copious one and then the regular normal ones.

IV
(A) Irrigation

An adequate arrangement of good irrigation water is absolutely essential to the success of orchards. Before taking any steps of starting gardens make sure of the water supply. It is useless trying to establish gardens in places where this arrangement is not possible. In places of scanty and uncertain rainfall one must be sure of the water supply from a well or reservoir. The area under orchard should be based on this supply "When the irrigation supply falls short or fails, the fruit production is doomed and the trees receive a set back in growth." In places where canal irrigation is available the gardener has not much to worry about, whereas, in absence of this facility, he must sink a suitable well for the orchard. The garden well must be of a type that can supply enough water for irrigating the orchard in the summer.

Water lifts

The most common water lifts are 1. Tenda (counterpoise bucket lift). 2. Mhote. 3. Rahat (Persian wheel). 4. Baldeo Balti, and 5. Pumps.

1. Tenda :—This is a very common indigenous device used all over the country for irrigating *baries* or small areas. It consists of a big pole balanced on one or two posts. The thinner and longer end of the pole is towards the well side and the thicker one to the outer side. At times some weight is also tied to the outer end. Due to leverage the bucket which is tied towards the thinner end, gets lifted up full of water without any difficulty. The man working has only to pull it down while dipping it in the well. As he is working with gravity he takes advantage of his weight and finds it easy to dip in the bucket. Ordinarily one man works the lift but for deep wells a help is required. The capacity of the lift is 500 to 600 gallons of water per hour.

2. Mhote:—This is the most useful water lift of India. It is very popular with small growers because it is cheap, made locally and requires little technique to work it. It is the best water lift for deep wells. It consists of a large leather bag or an iron or tin container. The former one is most common. The bag is generally provided with a trunk or the self-delivery tube. The *Mhote* with the self-delivery tube is economic, as it requires only one man (or even a boy) and only one pair of bullocks. The bullocks have to walk down a slope (or inclined plane) when lifting the water bag full of water. They are then required to come back to the well again, to fill up the *Mhote*. The bullocks require training for this but once trained they back up quite at ease and at quick space. In a spacious well two *Mhotes* can be worked together. With trained bullocks one man can manage both of these. The capacity of the *Mhote* varies from 24 gallons to 42 gallons of water (Pugh and Dutta) and in 8 hours it can safely raise 1620 maunds of water equivalent to approximately a half acre-inch from a well about 60 feet deep.

3. Rahat:—This water lift is well suited for big gardens and not very deep wells. Its present make consists of buckets of 1 to 3 gallons capacity fixed on an endless chain that is rotated on an iron drum which turns on an axle. All its parts are of iron, whereas, the buckets are usually made of galvanised iron. Most of the recent models are made with the axle turning on ball bearings which lighten the work.

This lift is gradually becoming very popular due to its efficiency of work and cheap working. One pair of bullocks and a boy is the labour required for working

it. Its capacity is easily more than 3 to 4 times than that of the *Mhote*.

4. Baldeo Balti:—"This consists of two boat-shaped water lifts which are tied with a rope or string which passes over three pullers. They are arranged in such a way that when one of these boat-shaped lifts rises and discharges its water, the other one goes down and refills the water entering the lift by means of a valve" (Pugh and Dutt-Crop production in India). It is best suited for lifting water from a tank. The water level should not be more than four feet or so. It can be worked by one bullock and a boy.

5. Pumps:—Pumping out water with mechanical power is gaining popularity. Centrifugal pumps are generally used. This method is very good for river, tank or well and supplies good amount of water. It is the best for large areas.

System of Irrigation

A very common mistake committed by the growers is to make a *thala* round the stem of the plant and to fill it with water. Many trees suffer, if their stem are submerged in water. This is particularly so in case of oranges. Mangoes to a certain extent are tolerant. But as a general rule it may be safely stated that "the frequent standing of water up against the base of the stem injures the bark and reduces the life of the tree." Water and manure are taken up by the feeding roots. The span of the roots is equal to the spread of the branches. The feeding roots lie just below the extremities of the branches: it is here that the water and manure are required.

An Important Consideration

All the fruit plants require water in sufficient quantity but none of them will tolerate water-logging or excessive irrigation. Water lying stagnant at the root interferes with their proper breathing and the plant suffers in consequence. A pale yellow appearance of the plant is an indication of excessive or stagnant water.

The Ring Methods of Irrigation

The object of irrigation is best achieved by following the ring method. It consists of providing a circular channel all round the plant. The dimensions of the channel depend on the growth of the plant. In the early stage a channel of about 2 feet diameter is made. It may be about 9 inches wide and 4 inches deep. As the plants grow these rings are made farther and farther away from the stem keeping them just below the umbrella of the plant i.e., the span of its branches. Ultimately they meet the neighbouring ones and assume a square shape.

Layout of Water Channel

Never use the rings to serve as water ways also, because :—

1. There will not be proper distribution of water to the individual plants. Those at the lowest level always getting excessive water.

2. There will not be adequate control over the water to use it according to the need of the plants.

3. The manure and the soil from near the base of the plants at a higher level get washed to those at the lower ones.

Always, therefore, have the water ways inbetween the two alternative rows of the plants. Join the individual rings to this. The water ways in their turn are joined to the main channel.

Always take up irrigation from the lowest level and going up the slope. It is easy to control water by adopting this method. A trained man can at a time easily manage two such cannels i.e. for four rows of plants.

Do not fill the channel too quickly. Allow the water to get soaked and filled in.

The Furrow System

This system is followed for varieties planted very close i. e. like cape-gooseberry, the spacing of which is 18" to 24". It is also recommended for loose soils, like alluvial and sandy types in which water can percolate horizontally.

The Bed or Flood System

This is practiced in cases of fruits like banana which require frequent irrigation. The system is mostly followed under cannal irrigation.

(B) Manuring

In comparison to the ordinary field crops, fruit trees take a larger amount of nutrients. They, therefore, demand heavily on the nutrients available in the soil. Unless some action is taken to replenish this the grower will get little or no outturn from his orchard. A common method of keeping of the fertility of the soil is to add an adequate amount of manure to it. Manure is defined as any substance applied to the soil to render it more fertile.

Effect of Manures

Besides restoring the fertility of the soil, manures have a chemical action on the soil in liberating stored food. The mechanical effects of manures too are very important. "They improve the physical condition of the soil by making tenacious and heavy clay land lighter and more porous, and by binding together sandy soils and making them more capable of retaining moisture." (Sir, Henry Alford Nicholos).

What Plant Needs

Besides water, a plant requires a good many elements for its growth. Important among these are :—

1. Nitrogen. 2. Phosphorus. 3. Potassium. 4. Carbon. 5. Oxygen. 6. Hydrogen. 7. Calcium. 8. Iron. 9. Magnesium. 10. Aluminium . 11. Sulpher. 12. Manganese. 13. Chlorine. 14. Silicon. 15. Sodium. The first three are most important. No plant can attend full development without sufficient supply of Potash, Phosphoric acid and Nitrogen. Due to neglect in manuring, Indian soils are invariably lacking in these. An adequate provision of these and at times of Calcium is essential. There are some other minor elements like Zinc presence of which though required in fractional proportion is indispensable.

Actions of the Three Important Elements

Nitrogen:—It encourages vegetable growth and increases foliage production tending to produce larger leaves and more succulence in the plant. The proper and satisfactory growth of stem and leaves is hence primarily dependent on the supply of nitrogen to the plants which naturally take larger amount of nitrogen in comparison with the other two elements. A deficiency of this is invariably found all over India and a regular supply of this is necessary in all the orchards. Care should, however, always be taken not to give it in excess as it then tends to reduce the fruit yields.

Phosphorus:- The important action of phosphorus on plants are:— 1. In the seedling stage root growth is increased, leaf development is hastened and the first leave stage is more rapidly passed. 2. It accordingly hastens the maturity of the plant. 3. Strengthens the stems. 4. It makes plants disease resistant. 5. It promotes productions of flowers and fruits and improves the quality of fruits and 6. It balances bad effects of excessive nitrogen.

A phosphorus deficiency, though common in many soils, is, yet, difficult to detect. An adequate supply of this is essential for orchard to produce good fruit crop.

Potassium :- The important actions of potassium on the plant are:- (1) It acts as food material carrier from one part of the plant to another. (2) It increases chlorophy production, thereby increasing efficiency of leaves (thus it is a counterpart of nitrogen which mostly has quantitative effect on leaves). This results in greater production of Carbon compounds, starch, sugar, and Cellulose which in their turn improve the size and quantity of fruits. (3) It exercises a balancing effect between the phosphatic and nitrogenous fertilisers. Potassium is regarded of special importance to fruit plants. This assumption is based on the analysis of fruits and leaves of various fruit trees which show that they have drained the soil of a large amount of nitrogen and even larger amount of potassium together with small quantities of phosphorus.

Classes of Manures

Manures are of two classes :-1. Organic or natural which are commonly referred as manures, and 2. Fertilizers or artificial manures which are also known as chemical manures.

Value of Organic Manures

The great value of organic manures is that they are generally 'mixed' in that; they frequently contain nitrogen, which undoubtedly is most important, phosphates and potash mostly in a correct proportion. They also supply the much needed organic matter to the orchard. Thus by their addition the humus contents of the soil is increased which keeps it warmer, improves its texture and makes it more capable of withstanding drought. The last mentioned mechanical effect of organic manures is very beneficial to the Indian orchards.

Important Manures

The following are the few important manures commonly used in orchards.

1. Farm yard Manure
2. Compost
3. Oil-cake

} Very rich in organic matter.

4. Bonemeal
5. Wood ash

} Though they are not artificial yet they lack in organic matter.

6. Ammonium sulphate
7. Superphosphate
8. Potassium sulphate
9. Lime.

} Fertilizers.

Farm-Yard Manure

This consists of cattle dung, left over of the trough (grass, etc.) and farm sweepings etc. The value of this naturally depends on the ingredients that it consists of and also the method of its making. The present common system of dumping it close to the cattle shed is harmful and wasteful too. The manure looses all its manurial value due to the exposure to the weather. It is suggested that every orchard grower should make suitable manure pits. These should measure 10'x5'x 5'. The manure pits should also have a shed over them so that neither direct sun nor rain can effect the valuable contents of the manure. When the pit gets filled with the sweepings, cattle-dung, etc., cover the contents with a layer of earth. This will stop the escape of valuable elements in a gaseous form. If cattle urine is included it will increase the value of manure. Horse stable sweepings can also be used but it is better to keep its pit separate. It is best suited to heavy soils. In all cases farm-yard-manure must be well decomposed or it will do more harm than good.

naturally present in a particular soil is enough. The presence of lime can be determined by the action of hydrochloric acid on soil emulsion in water. The hydrochloric acid will cause effervescence if there is any lime in the soil and the degree of the effervescence will give a rough estimate of the quantity present in the soil. If the fizzing noise of the reaction is not heard from a distance of about 9'' to a feet, it may be assumed that the soil is deficient in lime.

Another test which indicates the deficiency of lime is the reaction of a saturated solution of potassium thiocyanate on soil. A crimson or scarlet reaction is an index of lime deficiency. The more the acidity the deeper will be the colour.

For all soil deficient in calcium contents liming must be done. This consists of adding lime in some suitable form to the soil. Generally lime-stone, chalk or gypsum is used. Apply lime in powdered form, either before planting or when the plants are dormant. Never apply lime with ammonium sulphate or before or after an application.

Green Manuring

An orchard cannot only be manured but also cleared of many weeds by resorting to green manuring. It consists in burying into the land of a growing crop, generally a legume, so that its physical conditions are improved and the organic and nitrogen contents are increased. *Sann-hemp* (Crotolaria juncea) and *Dhanchia* (Sesbania aculeata) are the two common crops utilised for green manuring. Both are legumes, quick growing, giving more maundage and are also succulent, which are the conditions suitable for green manure crop. *Sann-hemp* is popular all over India whereas *Dhanchia* is more suited to Bengal and Assam conditions.

Sann-hemp for green manuring should be sown as soon as the monsoon breaks. The crop will have grown 3 to 4 feet by August i. e., 4 to 6 weeks after sowing when it is ploughed in. The crop must be burried in the soil before it becomes tough.

How to Manure

The use of bulky organic manure is very beneficial in alkaline soils as these elements have a good influence on the reaction of soil. Farm yard manure should be applied at the rate of 20 to 30 cart loads per acre. Manure should be given round the plant away from the stem near the feeding roots. It should be spread and then worked into the soil. Apply before the rainy season.

Top dressing

Manure like oil cake, bonemeal and fertilizers are mostly given as top dressing to plants. The best time to do this is at the end of the dormant period and before flowering starts. The amount of manure will depend on the age and growth of the plant. Manure should always be applied on the basis of the requirements of an individual plant i. e., so many seers per plant and not so many maunds per acre. The dose should at the same time be modified according to the condition of the plant viz., sickly plant requires smaller doses. A large dose may prove so harmful that the plant may even die. The only sound principle of manuring, like doctoring, is to prescribe for each plant as a patient.

Fertilisers

Firms dealing in artificial manures issue a lot of propaganda about their use by posters, leaflets and pictures. One is likely to be led astray to believe that they alone can give good results or that better yields cannot be obtained without their use. This is not correct. These manures should always be used with due reserve. They are very strong tonics full of a particular element and their careless and liberal use will do more harm than good. Like an injection their use is recommended in special contingencies.

Irrigation always follow top dressing and the application of fertilizers.

Note:—There is no definite data to indicate the best manuring systems for fruit trees. Definite experience proves that, trees respond well, to do the use of the bulky organic nitrogenous manures. Thus green manuring, an application of compost, Farm yard manure etc., are always beneficial and to be recommended.

A SCHEME FOR SOAP MANUFACTURE (ON VILLAGE LINES)

By: M. S. Raut

Introduction

This article is not written with the aim of giving exhaustive information on Soap Making. After working for several years at Soap Making we have come to the conclusion that it is quite feasible to make soap of good quality out of the Indigenous materials with a fair knowledge of Soap Making processes. Further, it is well known that the chemical 'Soap' is the same even if we use the raw materials from the different sources. Thus if any one says that Gram Udyog Soap is inferior to 501 or Hamam it does not show that soap of that quality cannot be produced in the village, but that the manufacturer of Gram Udyog Soap is not skilled in the art of Soap Making.

In this article an attempt is made to show how good quality soap can be manufactured in the village. The process dealt with at length is the preparation of soap by semi-boiled process and then graining and fitting. In our opinion this is well suited to the village conditions and yields quality soap. The article is expected to be useful to workers who are working in villages and would like to manufacture soap on a modest scale using the indigenous materials.

All the points are briefly discussed and the question of soaps out of Caustic Potash is left out of consideration as they have limited use and are too soft for ordinary purposes.

CHAPTER I

Capital Outlay

Capital outlay for producing about 75 maunds of soap per month (i. e. 3 maunds per day in a month of 25 working days).

(1) Building—16x60—960 Sq. ft.
4 Tanks inside the building —Size 4'x4'x4' each

Oven and chimney area	...	6' × 10'
Store room	...	16' × 10'
Office room	...	16' × 10'

(2) Equipment — Rs.

2 or 3 soap kettles 3'x3' ...	500
1 Stamping table	20
Slabber cake and bar cutting equipment	100
8 Soap cooling frames ...	100
4 Dies	100
1 Hydrometer	20

(2) Compost

It can be defined as artificial farm-yard manure, composed of all, the animal and vegetable refuse the farmer can get. Its credit lies in the utilization of any useless vegetable matter as manure and also the short period it requires for being ready for use. The compost made by the present method is in fact a synthetic F. Y. M.

A Simple Method of Compost Making

Select a level ground as near the cattle-shed as possible and make a pit of 10'x 6'x2' and collect straw, grass, leaves of plant, refuse, etc. Place a six inch layer of these in the pit, then a one inch layer of urine earth and cowdung (Bone meal, if available, may be mixed at the rate of 5 lbs. per 100 c. Ft. Sprinkle the heap with water preferably with urine diluted ten times in water or a cowdung emulsion of 1 sr. of dung in 10 srs. water. Continue these alternate layers till the heap is about 2 feet above the ground level.

Adequate amount of moisture and abundant aeration are essential for the decomposition. The heap should hence be never allowed to get too wet or dry out completely. Aeration is maintained by making the heap loose. It should never be trampled and made higher than 4 feet or it will get compact due to its own weight. Likewise its width should also not be more than 6 feet. Further to achieve full aeration for proper and uniform decomposition the heap requires to be broken and remade twice, first about one and half month after it is completely made and second time a month later. The compost should be ready in three months.

Oil cake

There are some oil-cakes which, due to their nature, cannot be used as cattle food but all these can with very great advantage be utilised as manure. Oil-cakes are rich in organic matter and nitrogen contents. They are valued as nitrogenous manure but they also contain small amounts about 2 percent each of phosphorus and potash. According to Dr. Lindley, oil-cakes have an energetic thougth transitory action. Their great value consists in giving an impulse to growth in the early stage. Oil-cakes should be finally powdered and applied or they may first be decomposed and then applied. For powdering oil-cake use a *Dneki* (paddy pounding appliance).

Fermenting Oil-cakes

Take powdered oil-cakes 1 maund, garden-soil 10 seers and cow-dung emulsion (thick) 10 to 12 srs. Mix these thoroughly and make into a heap. Plaster the outer surface of the heap thoroughly with mud. The plaster should never be allowed to crack and the heap should be made in shade, and during summer lightly sprinkle it with water. Care, however, be taken not to keep the heap very wet. The heap should be allowed to ferment for about 10 to 15 days. It should then be opened and exposed to the atmosphere for about 2 to 3 days with frequent stirring to reduce the offensive smell. It is now ready for applying.

Caster cake is most quickly utilised by plants whereas '*Mahuwa*' cake is useless and harmful. Never use this cake as manure.

Bones

Bones are the most easily available of phosphatic manures. In India, thanks to the very high death of cattle, a large quantity of animal bones is available everywhere. Their value, as yet, is not fully realised by the cultivators who do not know that the bones can meet the

full demand of phosphate for their crops and orchards.

Big pieces of bones take very long to decompose. They should, therefore, be broken and powdered. A very simple method of powdering bones is to half-char them by burning. One part of fuel like tur stalk, cotton stalk, etc., and 10 parts of bones should be arranged in alternate layers making up the heap to 4 to 6 feet high. It is then burnt. The halfcharred bones can be easily crushed in a mortar mill.

Wood Ashes

Wood ashes are the cheapest and most easily available potassic manures. Wood ash contains about 5 to 10 percent of potash in the form of carbonate. The ashes of hedge trimmings, young wood, sunflower leaves stalks and heads, banana refuse and maize are very rich in potash contents. Various obstinate weeds when burnt to ashes become a good source of potassic manure. Wood ash manure is more valuable than other potassic chemical manures because its action is alkaline hence it does not leave an acid residue in the soil.

The potash in ash is in so available a form that it should not be left uncovered or the potassic value will be reduced. It is best applied fresh. Collect useless weeds, brush-wood, etc., and keep them in heaps at various places in the field and burn them. It is not only a good way of getting potash to the soil but also of destroying various harmful insects, weeds, etc.

Ammonium Sulphate

This is a by-product in the distillation of coal in gas works. It is one of the most popular of the quick, acting nitrogenous manure. It contains 20.4% of nitrogen.

Super-phosphate

"This is manufactured by treating ground rock phosphate or any material which contains a large percentage of the tricalcic or bone phosphate, with sulphuric acid." This treatment renders the phosphate more soluble.

Potassium Sulphate

This is generally prepared from Kainite in which it occurs in a natural form together with potassium chloride.

Lime and Liming the soil

Lime is one of the most important toning agent of the soil. Its presence in an adequate amount is absolutely essential for the utilisation of plant food from the soil. The importance of lime can be understood from the fact that no soil is fit for growing plants, however heavily it has been manured, without lime. Its action, both chemical and physical, are very important for the proper amendment of the soil. It makes clay less tenacious and sand more adhesive. It liberates plant food acting upon reserve plant material and turning it in an assimilable form for the plants. Its chemical reaction to neutralise acidity is taken advantage of in sweetening sour soil. It hastens and encourages decomposition of organic matter, destroys fungi, creates disease resistance in plants and detracts certain insects. Another property of great value in lime is that it removes excess of an element from the soil thus saving the crop from its effects.

In nature lime is generally found in the soil as carbonate of lime in the form of chalk, lime stone, etc. Due to the above mentioned qualities and also to the fact that certain fruit plants are partial to the presence of lime in the soil, it is necessary to ascertain whether the amount

	Rs.
1 Stamping Machine ...	200
1 Caustic lye tank... ...	25
2 Buckets	5
1 Balance and weights ...	40
Scoops and laddles ...	10
2 Sigdies	5
Knives and spatulas ...	5
2 Pans	20
2 Soap drying racks ...	50
2 Drums	50
1 Show-case	50
Total Rs.	1300

(3) Daily consumption of raw materials

Sajji-matti about 3 mds.

@ Rs. 2/- per md. ...	Rs.	6-0
Lime—13 srs.		1-8
Oils & Rosin—80 srs.		
@ Rs. 1/12 per sr. ...		140-0
Fuel—5mds.		
@ Rs. 1/8 per md. ...		7-8
Total Rs.		155-0

(4) Recurring Expenses

Management	Rs.	5
Wages, packing etc. ...		10
General, Repairs etc. ...		10
Rs.		180

(5) Daily production of Soap

—3 mds. @ Rs. 60 per md. Rs. 180.

CHAPTER II

Raw Materials

The raw materials required in the soap manufacture may be classified under the following heads :—

(1) Essential raw materials and (2) secondary raw materials. Under the first division come the raw materials which are absolutely necessary for the manufacture of soap. They are :—

(1) Fats and Oil, (2) Alkalis, (Sajji-matti, Sajji-khar or papad-khar and lime) (3) Water.

The second type of raw materials are not absolutely necessary for villagers' soap but their use increases the value of soap in every way. They are :- (1) Rosin, (2) Salt, (3) Colours, perfumes and fillers. Detailed uses of the above raw materials are given in a condensed form.

Oils

From the soap maker's point of view, the oils and fats are classified into separate groups. The properties of each group are different from the rest, i. e. the soaps made out of any one class of oil (or even a single oil) have different properties from those made out of another class. The chief oils available for soap making with their properties are given in the table below and are arranged in order of their usefulness :—

Name of Oil	Saponification	Speciality
(a) Mahuva, Neem, Karanjia, Ghee	Saponify easily	Soap brownish yellow and fairly hard. Mahuva gives good creamy and thick lather; last longer than cocoanut oil soap, well adopted for toilet and washing soaps. Neem and Karanjia have medicinal and antiseptic properties.
(b) Cocoanut, Khakan, Marotti Oil	Saponify easily with strong alkalis; saponification proceeds rapidly when started.	White, brittle and hard. Lathers freely but the lather is thin. Harsh to skin. Very highly soluble. Can be used even in hard water. Suitable for cold process. Utmost control required to prevent frothing over the soap kettle. Marotti soaps are disinfectant.
(c) Groundnut, Niger seeds, Sesame and Cottonseed oil	Difficult to saponify. Require comparatively weak lyes.	Soaps rather soft. Scanty lather and not lasting. Waxy in appearance and close in texture and easily grained. Tends to get rancid on long storage.
(d) Animal fats, Kokam, Malabar tallow	Saponify with weak alkaline lyes. Difficult to saponify.	No good lathering properties. In admixture with other fatty stock they give stability and firmness to the lather which will be creamy in appearance. Easily grained and tallow soaps are not so soluble in water and form curds with hard water.
(e) Linseed Castor, Safflower, Sunflower, Poppy seeds oil	Saponify readily	Soap brownish in colour. The mixed soap is somewhat transparent and clear. Readily soluble in water. Soaps very soft. Linseed soap disagreeable in odour and lather not very good.

Alkalis

The next raw material, caustic soda, is not found in nature and so has got to be prepared. Sajji-matti, sajji-khar or papad-khar are the natural sources of soda ash. This soda ash is causticized with lime to get caustic soda. The process is as follows :—

A solution of sajji-matti or papad-khar or sajji-khar of 13° to 14° Be is made from one of the above raw materials. This solution should be well boiled in causticising tank or drum made of iron. Some quantity of fresh quick lime is added and the solution well stirred. The mixture is then allowed to settle for sometime during which time causticization goes on rapidly. Then a small quantity of the clear top layer of the solution (no suspended matter should come in) is taken in a white glass bottle and to this some lemon juice is added. The object of this is to test if the causticization is complete. If there is visible effervescence (as is seen when opening a bottle of aerated water), then the lime

added is insufficient. Further, to know if the proper quantity of acid was added or not, a drop of the test-solution after addition of lemon juice is put into turmeric water. If the yellow colour changes now to red then the amount of acid is insufficient and so for the next trial more acid should be added until the turmeric solution dyes not change colour. When this happens, it means sufficient acid was added. If with this effervescence continues more lime should be added until practically there is no effervescence.

The above test is based on the principle that turmeric solution is red to alkalis and yellow to acids. The object of adding acid to the lye is that when the two come together, the soda ash present is attacked by the acid to evolve the gas, carbon-di-oxide. This liberation of the gas is called "effervescence". When effervescence takes place, it means that the lye still contains washing soda. Of course, first sufficient quantity of acid must be added because caustic soda reacts more rapidly than washing soda and takes up the major portion of the acid.

It is easy to causticize sajji-khar or papad-khar. But in the case of sajji-matti, a preliminary process of extraction of the soluble salts from the bulky earth is necessary. Further, caustic soda has a tendency to absorb carbon-di-oxide from air and form washing soda. It is therefore advisable to make caustic soda daily.

Water

Water is an absolutely essential intermediary substance in bringing about the chemical combination between the oil and alkali. Soft water is the best for soap manufacture as well as for washing clothes with soap.

Rosin

Village soap can be made without rosin. But mixing of rosin with fatty stock increases lathering washing properties, gives a yellowish shining colour and overcome the smell of oil to a great extent. Rosin should not be added to those soaps intended for washing silk and wool. Rosin reacts with washing soda producing large effervescence and so the saponifying vessels should have large capacity. It is used in small proportions and makes soap more soluble and soft.

Salt

It is mainly used for graining soaps. When sufficient salt is added after the saponification is complete, then the soap separates out being insoluble in it. But the quantity of salt required in this process varies from oil to oil; cocoanut takes the maximum amount.

Colours

The colour chosen should not react with alkalis. It should have no irritant action on the skin or the perfume added. It should be quite soluble in hot water. It should not cause any spotliness when the soap is kept for a long time. The colour should, for artistic purposes as far as possible, resemble the colour of the flower whose smell is desired to be reproduced.

Perfumes

The idea in adding perfumes is to suppress the natural smell of oils and give a pleasing smell to the buyer. Toilet and medicated soaps are carefully scented with high grade essential oils. The perfume should not react with the colour added to the soap, as this will result in the loss of both the colour and the smell. Natural perfumes which can be used with advantage are lemong grass oil,

orange oil, sandal wood oil, eucalyptus oil and lavender oil etc.

Fillers

The fillers are foreign bodies incorporated in the soap. They increase the bulk of the soap without a proportionate increase in the cost of production. Filling should not be so heavy as to affect the detergent action of soaps or affect their keeping qualities. Some of the fillers have no washing properties. They break the grain of the soap and make it wasteful. Water soluble fillers are best added by dissolving them in an equal amount of water and adding the solution to soap with thorough mixing just before framing. The common fillers are washing soda, sodium silicate and potash.

CHAPTER III

Preparation of oil charge

The different oils and their proportions for soap manufacture are dependent on the quality of soap we would like to manufacture, the cost of oils and their availability. The required proportion of oils is worked out giving due consideration to the above points and the nature of the soap produced by different oils. Then the oils are weighed out into a soap making pan or drum which has a capacity four times the weight of oil charge. If there is rosin or any solid fat, it is first melted well and then the other oils added when the oil charge is ready for the addition of the lye.

Some of the more familiar formulae for soap manufacture are given below:—

	Punnal oil in srs.	Mahuva in srs.	Cocoanut in srs.	Castor in srs.	Ground-nut in srs.	Rosin srs.	Cotton seeds in srs.	Til oil in srs.	Mustard oil	Karan-jia oil.
(1)	...	46	10	5	15	4	...	...	...	...
(2)	...	40	5	6	26	3	...	...	...	...
(3)	...	24	24	4	22½	5½	...	...	...	...
(4)	...	20	40	20	...	...	...	...	...	...
(5)	...	...	35	...	22	3	20	...	...	...
(6)	...	45	...	5	20	5	5	...	...	...
(7)	...	48	...	...	28	4	...	...	...	10
(8)	40	...	25	...	...	5	...	...	...	10
(9)	...	...	50	...	10	5	10	5	...	...
10)	...	...	50	...	5	5	...	...	20	...

CHAPTER IV

Actual Process of Manufacture

(a) *Saponification* :—

After the oil charge is made in the drum, it is kept on the oven and a small fire started to heat the oil a little. Incidentally it may be mentioned that the oil charge need not be necessarily very pure because when we grain the soap all the impurities will be removed. When the oil becomes a little hot, a small quantity of the weak lye of 10° Be is added. After a little time the reaction between the oil and alkali starts. This is shown by a thick creamy mass boiling vigorously. If for any particular cause, no reaction starts then it means that the strength of the lye is either not sufficient or is in

excess to saponify the oil. This happens because of different oils requiring different strengths of lye to start saponification. In such cases, first a little water is added to the drum when the strength of the lye comes down. Then it is well stirred and heating continued. If now the lye is of proper strength reaction starts immediately. If on the other hand the lye is weak, some of the water is allowed to escape as steam or if this cannot be done, lye of a higher strength is added. By such adjustments when the lye acquires the required strength then the reaction starts. If after these manupulations the mass is still resistant, then a few soap chips are added to help the starting of saponification.

It will be noticed that as long as saponification does not take place the lye and oil remain separate as can be seen by lifting the mass in a laddle and pouring down the contents when oil and caustic fall separately but when the saponification is in progress then the two form an emulsion and fall down together from the laddle. Further, the mass becomes thicker making the escape of steam more difficult. The whole mass rises up in the drum. At this stage care is required to control the process as otherwise the whole drum will empty out. This is particularly so when cocoanut oil predominates in the oil charge. In many cases when once the reaction begins, much heat is developed and this heat is enough to carry the reaction to completion and hence only a very low fire will be required at this stage. In the case of cocoanut the heat evolved is so great that cold water has to be sprinkled to control the saponification. In the initial stages of reaction a large amount of foam is produced and the mass has a tendency to rise up but at later stages of reaction the mixture boils quietly without foam.

It must be noted that small amounts of lye should not be allowed to completely react with the oil to produce a stiff mass. This hinders further reaction. So fresh quantities of lye must be added before the first is used up by the oil. By this process all the necessary amount of lye is put into the pan. It is good to complete the reaction with lyes of 16° to 18° Be. Sometimes a small amount of water is added to thin the mass and allow steam to escape.

Next we have to know if the oil or alkalis is in excess. For this purpose a small quantity of the mass is taken on a knife edge and allowed to fall. If a thin film develops when falling then neither the alkali nor oil is in excess. If it shows turbidity then one of the above components is in excess. A very tiny drop of the mixture is tasted with the tongue. If there is a sharp biting sensation then there is excess of alkali; if not excess of oil. In such cases of excesses, some more oil or alkali is put afresh with care and the mass heated a little to complete the saponification. After the reaction is over then a good soap mass with neither an excess of alkali nor of oil, will form quite a transparent film or streates when dropped from a knife edge and have slight burning sensation to the tongue when a small drop is tasted. Further, when the mass is taken between two fingers and rolled then it must develop into transparent strings. Another test is that if the hot mass is put on a piece of glass, it must remain transparent till it cools and then assume a whitish colour. If the alkali is in excess, the soap immediately assumes a white colour whilst if the oil is in excess,

then the mass assumes a greyish colour round the edges. Also the mass on the glass plate should not break when pressed between fingers.

(*b*) *Graining or Salting out* :—

When the saponification is completed the mass contains soap, a slight excess of alkali and glycerine, all mixed together. The soap has now to be freed from excess of alkali and glycerine. Now it is known that soap is insoluble in saline solutions of certain strengths. This strength is dependent upon from which oil the soap is made. When the soap is still hot, a solution of common salt is added in small quantities to throw out the soap out of the mixture. The boiling is done slowly when much of the transparency of the soap is lost and also it becomes grannular. The required amount of salt alone should be used because any excess of it will cause enclosure of salt in the soap. Salting out is taken to have been completed when the frothy soap separates in clots or grains leaving below a clear liquid in the laddle when a small quantity of the mixture is taken in it. The boiling is then stopped and the mass allowed to settle for 6 to 8 hours undisturbed. During settling almost all the impurities and glycerine are taken up by the salt solution leaving clear soap at the top. The soap is now separated from the brine charge which can be used for graining a second charge. After this separation the soap is again boiled with a lye of 10° Be. along with a little water to keep the soap fluid. This helps complete neutralization of any oil that might have been left over in the soap. The addition of the lye may be stopped when there is persistant biting sensation even after a little boiling. It is now re-grained a second time using far less amount of salt water. This time the drum is covered with gunny cloth so that the soap settles *slowly* effecting a total separation. The theoretical yield of soap by this method is 150 % of the oil charge but these soaps contain as high as 30 % water.

(*c*) *Fitting*:—

The idea in fitting soaps is to get a purer form of soap. The method of fitting is as follows:—

In the grained soap strong lye of about 25° Be. is sprinkled so that it will be able to carry down with it most of the 'enclosed' salt. The salt free soap is then heated with a certain amount of water. This water may be added in stages so that in the initial stage the whole water gets mixed throughout the mass, then it becomes a paste and finally to a smooth thin paste. If at this stage a knife is put in and taken out, the paste should leave the knife edge clean and dry. Then the paste is known to have acquired the necessary viscosity. If by mistake more water has been added, the above test will fail and in such a case a little brine may be added and the whole mass boiled again until the above test is satisfied. All this manipulation is possible with experience. Then the soap is left in the drum and covered with gunny cloth to prevent rapid cooling. Then it is allowed to rest for one or two days when the soap settles in four layers. If the soap had been properly fitted all the impurities will have settled to the bottom. The first layer of settled soap is called frothy soap; the next layer is the good (or neat) soap; the third layer niger soap and finally the fourth layer liquors. The first layer is taken out and kept aside; the next layer is collected and any filling agent, perfume or colour is incorporated into it and then put into frames to cool

and solidify. The niger layer is taken in another pan for further treatment. If this, on solidifying is serviceable then it may be sold as such. The lowest layer is put into the brine charge for graining a fresh batch of soap. The frothy layer is taken up with the next charge for fitting along with the unserviceable niger soap mentioned above.

After the separation of the soap the salted lye can be used again for graining the soap of the next charge instead of fresh salt.

Using the fillers:—

If fillers have to be used, then silicate of soda and washing soda are the best. They are usually done for washing soaps whose hardness they increase. The silicate of soda is dissolved in an equal amount of water and when both are hot they are mixed. The whole mass should be vigorously stirred to prevent the formation of lumps. Sodium silicate should not be more than the 10% of the weight of soap in which it is to be incorporated. In the case of washing soda, the sajji-matti water should be about 20–25° Be. and 20% on the weight of soap. It should be remembered that a strong sajji-matti solution renders a firm soap brittle. Hence it is recommended only for weak soaps whose strength is not impaired by its addition.

Toilet soaps:—

These soaps are to be neutral because they should have no irritating action on the skin. For this purpose, the fitted soap is cut into shavings and remelted with care. Then the required amount of sodium bicarbonate or baking soda is added to completely neutralize the soap. The exact quantity of baking soda required can be determined by experience and testing with phenolphthalein. Then colour and scent are added separately and cooled in frames, cut into size and stamped. 1 to 2% on the weight of soap the perfume is dissolved in a little cocoanut oil and then added.

If carbolic soap is to be made 3 to 6% carbolic acid diluted with a little water is added. If Neem or Karanjia or Chaulmugra soap is to be made for medicinal uses then 10 to 50% of the whole charge of oil should be neem or karanjia or chaulmugra oil. Further, the selection of oil should be done carefully to control the hardness of the soap.

Barring and slabbing:—

The cooled whole block of soap is then cut into slabs and bars by a wire fixed to a frame and made into cakes of suitable sizes. It is then further dried a little and stamped in a stamping machine worked by hand. Cocoanut oil is applied to the die to prevent the soap sticking to it. It is then finally allowed to dry and wrapped in paper.

CHAPTER V
Equipment

In Chapter I we have given the names of all necessary equipment. In this Chapter we shall describe some of the special items in it.

(*1*) *Tanks*:—These are to be four rectangular tanks of size 4'x4'x4' each. These tanks should be so built as to facilitate a battery system of extraction of the carbonate lye. If there is not enough space available then the least size of each tank can be 3'x3'x3'. The tanks are thickly plastered with cement so that no cracks will develop in the walls and cause losses of lye.

(*2*) *Oven and Chimney*:-The oven should be of simple construction and be such that it is of the proper size for the

soap-making drum, should be so plastered that all the smoke escapes through the chimney only and be fitted with iron gratings; space may be provided below the grating to permit ash to fall and there should be enough ventilation in the oven.

(3) *Soap Kettle*:—This is nothing but an ordinary wrought iron drum of good wall thickness. If the wall of the drum is thin its life will be short. Hence for durability it ought to be 1/8 to 3/16" thickness. The bottom of the drum should be of 'U' shape for helping complete taking out of materials from it. There are two corks of 1" diameter fitted into the kettle. One of them is fitted in the lowest part of the side and the other about 1' from the bottom. The size of the drum is 3' diameter and 3' height.

(*4*) *Slabber and bar cutting equipment*:—For cutting the cooled block of soap, fine steel wire is stretched in tension on a frame and fixed by screw bolts and nuts and the soap pushed against the wire. This will cut the soap into slabs. If these slabs are cut vertically again they give rise to bars. These can be cut again in another smaller cutting machine of the same type, into cakes suitable for the die stamping.

(*5*) *Soap cooling frames*:—These frames are wooden or iron rectangular boxes (without lid) with facility to remove all the sides when required. The fitting of the sides should permit no leakage of the soap when it is put into the frame for cooling. The shape of the frame should be such that its height is comparatively greater than its breadth so that a large surface is not exposed to cooling. Besides, every one of these frames should be quite portable.

(*6*) *Dies*:—This is also very essential for the final shape of the soap determines its saleability. The shape should be attractive. Toilet soaps should have rounded edges whilst washing soaps sharp edges.

(*7*) *Stamping machine*:—This machine helps dieing and pressing of soap rapidly and uniformly.

(*8*) *Caustic lye tank*:—This should be a strong iron drum of ordinary drum size.

CHAPTER VI
Instruction for the Survey of Sajji Matti

The need of cleaning clothes and body is felt by all and an agent for such work which may be easily available and cheap is required. Sajji matti is one such thing, as this is found almost everywhere. Only it has to be recognised and its use learnt. The use of Sajji matti is essential also from the national economic point of view. Soda is prepared from sajji matti. Caustic soda is also extracted from it which can be used in the preparation of soap. There is a special way of cleaning clothes by sajji matti. This is explained in the appendix. A sample of such 'Matti' with the required particulars if sent to us, we will, after analysis, inform the percentage of soda present in it.

Sajji Matti: In several parts of India e.g. Punjab, Sind, Rajaputana, Upper portion of United Provinces and its adjoining districts of Bihar, Madras, Central Provinces, Mysore etc. These areas are characterized by low rainfall and low humidity. These are soda forming soils and are unfit for cultivation owing to this soda coming up every year between December and March. These are originated from the soluble products of rocks in the sub-soil. These are said to be brought to the surface by capillary action and when the water evaporates the solid deposit is left. The

analysis of this white efflorescence shows that it contains sodium carbonate, sodium sulphate, sodium chloride, sand and earth. Of this, soda forms 0-25% and varies widely even in the same locality. This product is given different names in different languages. In U. P. it is called *Reh*: Marathi—*Chowpanchi Matti or Khari Matti*: Gujarati—*Oos* or Khar: Kannada -*Chowlu Mannu;* Telugu-*Chowder mannu;* Sindhi—*Callar*; Tamil *Uvar-manu*.

One common indication of the presence of alkaline earth is that it is licked by cattle when they feel the need of certain salts in their system. When this earth is collected sneezing sensation is felt. Another ready test for it is that in a solution of sajji matti hands smeared with castor oil are immediately cleaned. Foams are formed if oil drops are added and stirred in its solution.

The following are particulars required to be elucidated by doing actual survey of the village where this sajji matti is found :

1. Name of the village
2. Population
3. Post
4. Taluka
5. District
6. The direction and the distance of the spots where sajji matti is found, from the village.
7. Their number and respective areas.
8. To whom does the particular place of sajji matti belong ?
9. To what use is the sajji matti being put at present ?
10. The number of "Ghanis" working in in the village.
11. The number of washermen inhabiting the place.
12. Is there any school in the village ?
13. What is commonly used for washing clothes locally ?

Appendix

A, Refining of oils:—Using the facilities available in villages the best way of refining oils is by using the common salt. It is not only easy but also quite inexpensive. The oil is heated well with 10% salt solution, when the mucilage coagulates. When the oil is cooled the mucilage settles to the bottom. In case the oil is of dark colour, caustic soda 1/2 to 1% on the weight of oil, is also used in addition when some of the impurities come up as scum which can be skimmed off. The oil may be washed twice with salt solution or even pure water.

B. Manufacture of Plaster of Paris and Chalk-sticks:—Good quality Gypsum stones are first broken into pieces of the size of 'tuar' grain. They are then spread on a flat shallow pan and heated indirectly, so that there is no heavy loss of moisture. The heating is carried on for two hours when the pieces break up to show fine white internal parts. This is cooled and crumpled into powder by fingers. This powder is called "Plaster of Paris" which is one of the raw materials for chalk stick manufacture.

During causticization of sajji matti calcium carbonate is formed as a bye-product. This is being wasted by most of the soap manufacturers. This calcium carbonate is washed twice or thrice to free it from all soluble alkalis. It is then well dried and powdered by hand to a fine powder. It is next mixed with Plaster of Paris prepared as stated above in the proportion of 2 carbonate to 1 of Plaster of Paris. The mixture is made into a paste with water (if any colour addition is necessary, dissolve it in the water) and put into moulds and allowed to dry when chalk sticks are ready for use.

THE RURAL INDIA

Vol. X No. 12.] DECEMBER, 1947 [Whole No. 107

"Salvation of India lies in Cottages"

—*Mahatma Gandhi*

WANTED ACTION

THE present situation in the country is the most confusing one. There are a number of issues-political, economic and administrative-affecting the destiny of the people which are pressing for decision and immediate action. In the changed circumstances of the country, the very constitution and the objective of the Congress have to be changed. The pledges given and the commitments made by the Congress through its election manifestoes have to be implemented. The whole machinery and the tone of administration must undergo a change and be made to suit the dynamic needs of a progressive national Government. Above all, national life in its manifold aspects has to be reconstructed in the shortest time possible to let the people understand and realise the blessings of their own administration.

In the course of his address to the A. I. C. C. at Delhi, the Congress President, Acharya Kriplani, placed these and similar issues for the consideration and decision of the Congress. A Committee has been appointed to evolve a new political and economic programme for the Congress which is called upon to submit its programme to the next session of the A.I.C.C. to be held sometime in January next. Taking the grave emergency of the food and economic position of the country into consideration, we are afraid, we cannot endorse any postponement of the decision on so urgent an issue, when vigorous and effective action can alone save the daily worsening situation. After all it is not so difficult to evolve an economic programme. What the people are most concerned is, how effectively and expeditiously the programme is going to be implemented to increase national production and to provide minimum needs of life to them which they sorely need at the moment and to which as citizens they are legitimately entitled.

People have no patience with dilatory measures associated with the appointment of Commissions and Committees, which generally waste away their precious time in elaborate thinking and planning, unaccompanied with definite purpose and determination to implement them. The public mood at the moment is, that they want the Government to act promptly and vigorously in every department of administration. The action of the Union Government in saving the critical Kashmir situation is an instance in point. This salutary action has immensely raised the prestige of the Government in the estimation of the people. And, they want the Government to be as alert and energetic in acting in other spheres of administration as well, which are equally important.

This is just the time when National Administration has to consolidate its position and create a stamp of its efficiency which should merit public sympathy and

cooperation. There is a growing volume of public dissatisfaction in the way things are being handled by our administration and they seem to form an impression that the National Government has fallen a victim to bureaucratic charm and red-tapism, and that they suffer from as much inaction, particularly in the sphere of constructive nation-building, as their British predecessors. Unfortunate as the impression is, it is for the Government to see its way to have it eradicated without loss of time. Both in the Government machinery and in the spirit of administration, there is an absolute need of distinct and immediate improvement. It is very much to be regretted that such an improvement is not much in evidence. To be more accurate, the quality and efficiency of administration rather than showing improvement has on the contrary deteriorated. Acharya Kriplani, the President of the Congress, cannot be accused of being actuated by partisan spirit or want of charity, when in the course of his address to the A. I. C. C., he is reported to have observed:—

"However, the unfortunate fact remains that red-tapism, jobbery, corruption, bribery, blackmarketing and profiteering are as rampant today as they were in the days of the British. The Common-man is as much the victim of injustice and exploitation today as he was before the national flag was hoisted over the Secretariat".

This is, however, only one side of the picture. The other and more regrettable aspect of the picture is that there has been large-scale decay of public morale among our political workers resulting in the loss of integrity and degeneration of the Congress organisation itself. Love for power-politics, selfishness, and personal rivalries have infected the Congress workers, which have greatly undermined the strength and solidarity of the parent political institution and rendered it incapable of strong and effective action both in the party organisation as well as in the Government administration. Alluding to the loss of morale among political workers and the disintegration that has set in the Congress organisation, Acharya Kriplani says:—

"Even more unfortunate is the evidence of decay in the calibre and morale of our political workers. The unity that held us together in the days of struggle and suffering is being increasingly marred by factions and divisions based more on personal rivalry than on any discoverable principles.

"The spirit of sacrifice and idealism that sustained us and made us what we were is being replaced by competition in our politics. It is tragic that we should disintegrate at a time, when we need all our strength, unity and moral resources to justify the hopes that the nation has reposed in us. For, if the salt loseth its savour, wherewith shall it be salted".

The trouble does not so much lay with the administration as with the Congress organisation. The weakness or inefficiency in administration is the resultant effect of want of vitality and strength in the parent institution. The strength or weakness of the party organisation in the country must of necessity react on the administration of the party as well. Sound and efficient administration cannot be expected of a party which itself suffers from decay and disintegration in the party organisation. It cannot be without reason that the Father of the Indian Nation, Mahatma Gandhi, himself has ceased to be a four anna member of the Congress and that in the course of 8 years two of its Presidents, Shri Subhas Chandra Bose and Acharya Kriplani, had to resign their Presidentship without completing their term of office. The causes of internal decay are deep enough and the greatest national physician, viz., Mahatma Gandhi, himself has times without number deplored this fact without being able to rejuvenate the organisation.

A stage has long reached that the Congress organisation should be completely overhauled. It should conduct its work in future on the basis of new ideology and new programme and with an abundant supply of fresh blood in its ranks. Affecting compromise between two irreconcilable ideologies and set of people who vastly differ in their mental outlook and way of life is simply incongruous, which the Congress has been attempting to do these many years. Patch-work, compromises and some sort of working harmony between elements that owe loyalty to more or less clashing political ideologies will never make for strength and effectiveness of the Congress organisation. Complete reorientation of the Congress Constitution, change in its objective and adoption of new ideology and new programme were therefore long overdue and it is well that the last session of the A. I. C. C. has appointed a Committee to submit proposals to effect this much desired change.

The people are impatient to know the policy of the Congress in the matter of Economic reconstruction of the country. It is difficult to say what exactly the Congress stands for? Of course, it can never side with Capitalism. The conditions in India are such that it cannot immediately adopt full-fledged socialistic economy as well. The chances are that an effort will be made to bring about compromise between the two extremes of Capitalism and Socialism through the middle course of decentralised economy.

The crux of the problem is, how the programme is going to be implemented to increase national production and to ensure prosperous conditions to the people. Absence of undefined ideology and undetermined programme of action are at the moment two serious drawbacks of the Congress, which must be removed. The next problem is wherefrom will come new human material inspired by the concept of new political and economic ideologies to implement the programme of national development? Such a stuff does not exist. Many of our development programmes do not make much headway in the absence of right type of administrative machinery to implement them. The present Government machinery is wholly unsuited to work up programmes of national development. If national development has to be affected, the present machinery must be scrapped. It is a fact admitted by no less a person than Pandit Jawaharlal Nehru, the Prime Minister of the State, himself.

That is the most difficult task confronting the National Government and it should hold priority in the new programme being evolved by the Congress. Not till a new set of personnel is there to run the administrative machinery, will the development of the country be affected. From her own personal experience as an honorary advisor to the development Department of U. P. Government, Mira Behn, writing in one of the issues of Harijan, traces the causes of failure of development schemes mainly due to the unsuitability of the administrative machinery of the Government and says:—

"The drawing up of development schemes which is at present going on at the Centre and in the Provinces, is putting the cart before the horse. The first scheme, which has to be thought out and put into action, is the creation of administrative machinery which will be able successfully to implement the Development schemes. Everywhere in the Government circles I find the admission that the machine is bad, but because of the nature of the problem, every one tries to evade the fact that revolutionary changes need to be carried out. To talk of big schemes without openly facing up to this fact, is to hoodwink the public".

With all the resources at the disposal of the Union Government, it should embark on a large-scale drive of recruitment and training of new administrative personnel in the absence of which development programmes of the country must of necessity wait. This is a colossal task and will tax the resources of the Government to the utmost.

What is true of the Government machinery is equally true of the Congress machinery. The new Congressman, who should be capable of discharging the functions of the Independent India, will be a different person than his predecessor who had comparatively less responsible jobs to do. He has to build a nation and not merely to paralyse a foreign administration. It will not do for him to be a good slogan-monger, platform speaker or paper propagandist. He has to be an efficient planner, organiser and administrator combined into one. The days of agitation and agitators are gone. The days of planners and administrators have come. The old Congressman, like his brother bureaucrat in the Government machinery, is an out-of-date person to cope with the new responsibilities. Both have outlived their utility in the new set of changes and will have to make room for another set of persons, who are gifted with constructive vision and service motive to build the glorious India of the future.

Times of revolutionary changes demand prompt and effective action. Independent India is on the parting of ways. It will be stiffling national life and creating impediments in the way of national progress at this juncture to be merely satisfied with half way measures and compromises, when strong and drastic action is the need of the hour.

NOTE

NATIONAL CONSCRIPTION

WE have drawn attention of the country to the necessity of National Conscription more than once in these columns. It is a good sign of the time that all politically thinking sections of the people are increasingly feeling the necessity of it after India has achieved Independence. This is one of the issues on which there are hardly two opinions in the country and the Union Government would be well-advised to pass early legislation making 'Conscription' for national service obligatory on all adult citizens of the State.

The magnitude of the problems facing new Union Government is simply staggering. Numerically speaking we have a huge population of three hundred millions. But having lived a sheltered existence in slavery under foreign rule for centuries, the people have hardly any idea of national preparedness to meet the demands of an Independent state in the context of the modern world. Slavery of centuries have on the contrary bred in us national vices of indiscipline, disobdience to authority, inertia and want of preparedness to face national calamities with courage and determination. It is no wonder, therefore, that the responsibilities of freedom find us staggering under their weight at the moment.

Psychological preparedness of the

entire Indian people to shoulder the great responsibilities of free India, is the first charge on our statesmanship. We have to build a strong and sound nation and harness all national energy to that end. We need all national energy to maintain our hard won freedom, to increase our national prosperity, to elevate and reconstruct the life of our people and to meet internal and external dangers with which we are faced. A strong and free people have to keep themselves in readiness to meet both internal and external dangers, to pursue their objectives with doggedness and determination and to show firmness to face their responsibilities.

In order to meet these responsibilities, we need a strong and disciplined nation. The call for conscription is, therefore, a call for national preparedness and to harness national energy to discharge the heavy responsibilities of nation-building.

It is not merely for building military strength of the nation that we need conscription. We need a large army of two million trained teachers to wage war against illiteracy and ignorance and about an equal number of doctors and nurses to make the nation healthy and strong. Armies of technicians, skilled farm and factory labourers to improve national production are in absolute demand and there is far greater need of trained social workers to man social services of the country.

To whichever side we may look, dearth of trained and efficient workers is our greatest handicap which must be removed by the National Government. A free country cannot afford to remain in a state of national unpreparedness without risking its very existence. In a democratically governed country where every adult has political right to vote, he has also the corresponding duty to render efficient service to the nation to make democracy real. It is by compelling service and sacrifice to the nation that the State should instil democratic values in every citizen and make him an asset to the country.

We live in the midst of very dangerous times when the state is required to remain prepared to meet all emergencies whenever they arise. A disciplined and prepared people alone can meet the demands of the present difficult times and the only way to do it is through State Conscription.

TACKLE PROBLEMS OF PRODUCTION

"The fundamental economic problem of the world today is the problem of production, and unless the productive resources of the world damaged or destroyed by the war are repaired and re-employed, and unless resources now lying undeveloped, are exploited as effectively and as rapidly as possible, the mere liberalisation of trading conditions will not bring about a substantial and lasting increase in world trade and employment."

—Mr. C. H. BHABHA,
India's Minister for Commerce

"JAI SOMNATH!"

By: K. M. MUNSHI

Note :— The announcement by the Union Government of the renovation of 'Somnath' Temple is a great event of historical importance to this country. For centuries together, students of Indian history have been receiving their first shock of life of religious persecution suffered under foreign rule, when they read of the destruction of Somnath Temple at the hands of Mahmud of Ghazni. The shaking of Somnath Temple varily marks the fall of fortunes of our people and the ruin of the glory that was India. This destruction of the sacred religious heritage of the Indian community was later on followed by political and economic conquest of the people by foreign invaders. And this process of destruction has continued unchecked for a thousand years. The decision of the National Government to renovate this historical Temple is, therefore, a piece of great Statesmanship and again marks another turning point in the fortunes of this country towards national renaissance. This is an act of great psychological value to the Indian people and we have no doubt, that it will be deeply appreciated by one and all in this Country.

We have a living faith with us that the third *Millennium* of the Vikrami Era is a great period of Aryan renaissance. Renovation of Somnath Temple is a definite pointer of the Age of Renaissance that has only recently dawned on us. Let the 'Renaissant India' be worthy of its past great heritage. It is in this hope, that we reproduce the learned article of Shri K. M. Munshi on 'Somnath' Temple for the benefit of our readers.

—*Editor*

ON Kartak Sud 1, V. S. 2004, November 13, 1947, Sardar Patel and Kaka Saheb Gadgil were greeted with *Jai Somnath* at the hallowed spot where stands the ancient shrine of Somnath built by Kumarapal, the Chalukyan King of Gujarat, in 1169 A. C.

Jai Somnath has been ringing in my ears since 1912 when I wrote the first of my quartology of historical novels on Chalukyan Gujarat. It was once the battle cry of mediaeval Gujarat; a challenge of West Bharat, when its confederate forces resisted the might of Ghazni's conquering ruler, Mahmud. In my efforts at reconstructing the history of Gujarat, I found it the symbol of past greatness. To the ears of listening India today, it is the cry of a life of power, strength and freedom.

History and Tradition

This ancient shrine of Somnath, evoking immortal memories, according to tradition, has stood "where the sea surges on a pearly shore" since the beginning of time. Here, Shankar, the dread Lord of the Universe, manifested himself at creation's dawn. Here, the first shrine in burnished gold was built by Soma in the early infancy of the world. Here, Dharmaraja with his brothers came during their sojourn into the forest to lay his offerings before the Lord. Here, came the Yadavas, proud of their power, and in the infatuation of their power, and in the infatuation of their strength, destroyed each other; for, the spot on the bank of the sluggish Hiranya, called Dehotsaraga where Sri Krishna, the embodiment of triumphant manhood, died, is but a few furlongs away.

At this shrine, worshipped the citizens of the city, now Junagadh or Jeernadurga, since the first days of its greatness; the city, which, as the famous inscription on Girnar shows, was a provincial capital of the viceroys of Asoka, of Rudradaman, a Bactrian Greek by birth and Hindu by adoption, and of Skandagupta, the Gupta Emperor who vanquished the Huns.

Centre of Shaivism

Even in the Epic and Puranic literature, Somnath is referred to as an ancient and revered shrine. It became the headquarters of the Pashupat cult of Shaivism, which Lakulesh founded in the second century of the Christian Era and which for centuries commanded the allegiance of millions of devotees from all over India. The Gupta Emperors must have endowed it; and so must have the kings of Valabhi (near modern Bhavnagar)—one of them, the grandson of Shri Harsha, being emperor of North India.

When Huentsang came to India in the middle of the seventh century, Junagadh was a flourishing town with Brahminical universities and Buddhist monasteries. Nagabhata II and his son Mihir Bhoja of the Pratihara dynasty of Kanauja, styled Gurjjareshwar, held sway over Junagadh. Mihir Bhoja, one of the greatest of Indian emperors, married the daughter of Junagadh's king and no doubt worshipped at the shrine. With the rise of the Chalukyas of Gujarat in 940 A.C. Somnath became the guardian deity of Gujarat, if it was not already so.

Mahmud's Invasion

In 1025 A.C. Mahmud of Ghazni sacked Somnath and had to flee to Kabul through the deserts of Cutch under the pressure of a confederacy of Hindu kings led by Bhoja Parmar, then the most powerful ruler in India. At the time, Somnath's was the leading shrine in India. Thousands of learned Brahmins worshipped there with water brought from the sacred Ganga. Hundreds of musicians sang and danced in devotional ecstasy before the Lord of the three worlds. Thousands died in defence of Somnath. Mahmud won and destroyed the shrine; but within a few years a more magnificent one rose in its place at the behest of Bhoja Parmar of Malwa and Bhimdev Chalukya of Gujarat, an event which I depicted in my novel *Jai Somnath.*

Temple Rebuilt

In Junagadh there is a place called Uperkot, a fortress associated with Ra Khengar, the king of Junagadh. His wife, Ranakdevi, the *sati* round whom have aggregated tales and folk songs of old Gujarat and whose name today is a household word, was wooed in vain by Jaisinha Sidharaja, the powerful ruler of Gujarat. In 1169 A.C. Sidharaja's successor, Emperor Kumarapala, built the temple and entrusted it to Bhava Brihaspati, one of the most learned of Brahmins of the age. But the shrine was then a living symbol of devotion fluttering with ten thousand banners. Its architectural grandeur can be measured even by the surviving fragments which still stand.

After the Chalukyas fell before Alla-ud-Din Khilji in 1299 A.C. Ra Mandliks of Junagadh, the guardians of Somnath, defied the Turkish power at Delhi for a century and a half. During the last days of the Mandliks, in Junagadh, lived the greatest of Gujarati poets and a devotee of all-India fame, Narsinha Mehta, the author of the *Vaishnava Jana* hymn so dear to Gandhiji. Ultimately, the Mandlik was forced to abjure his ancestral faith for Islam and the shrine fell into neglect till Marathas conquered Kathiawar. A new temple was created at a little distance from the old shrine. The Babi Nawabs of Junagadh during the last hundred years decided that time and vandalism should be allowed to do away with this vestige of immortal glory.

Shrine in Ruins

About twenty years ago I visited the shrine, then broken and crumbling. The

linga had been removed. A Muslim inspector had tied his pony where once stood the deity, worshipped by emperors. Stones were being slowly removed by authorities; at places, foul attempts at desecration could be seen. The old building, wane and shattered, stood silhouetted against the golden background of the early dawn. The waves beat on the 'pearly' shore but a few steps away, echoing mournfully the all but forgotten memories of the chants and music and the roll of drums wherewith the Lord of the Universe was once worshipped.

Dream Comes True

I then went to Dehotsarga, some furlongs away, where Sri Krishna had shuffled off His mortal frame—the one place in India, after Mathura, which can be characterized as the holiest of holy, associated with the life of Him who taught the world the message of the *Bhagwadgita.* A neglected temple stood there; the Babis had prohibited repairs to the temple as also any worship thereat. For several years past, a very influential committee headed, if I remember right, by Mr. Purushottamdas Thakurdas, had struggled to get the temple opened and repaired. But the Nawabs of Junagadh had sternly refused permission. This spot, so sacred, so full of noble association has remained closed—a thing to be ashamed of for us who worship Sri Krishna and attempt to live by the message He delivered.

In romance, I described the reconstruction of the shrine in 1028 A.C.; in history I described the second reconstruction in 1169 A.C. by Kumarpala. Again and again I had dreamt and written that some day the shrine of Somnath shall rise again, and the holy Dehotsarga shall be a monument of living fame. During all these my feeble attempts at recreating Gujarat's forgotten past I never dreamt that I would live to see this day. Where once ancient and mediaeval heroes worshipped, stood once again Sardar Patel representing the Free India of today, and pledged himself to resurrect the shrine.

And what I had beheld with my imagination more than once, I hope to see with my eyes—Somnath's sacred banner fluttering in the morning sea breeze from the turrets of a gorgeous temple as gaily as it fluttered when the shrine symbolized the grandeur that was India.

—Hindustan Times

AIM OF SOCIAL WORK

"The aim of social work, as generally understood, is to remove social injustice, to relieve distress, to prevent suffering and to assist the weaker members of society to rehabilitate themselves and their families, and, in short, to fight the five giant evils of (1) physical want, (2) disease, (3) ignorance, (4) squalor, and (5) idleness"

Mr. B. G. KHER,
Premier of Bombay.

A PROGRAMME FOR REBUILDING VILLAGE INDIA

By: M. S. Swaminathan

IT has been recognised that the heart of India lies in its villages. But this heart is now feeble and inarticulate; its beat is almost imperceptible. The seven lacs of villages of our country which have been rightly called as the life-line of India, to-day present a deserted and desolate appearance in contrast to the humming life with which they were filled but a few centuries ago. Since a long time, the villagers have been languishing in utter poverty, ignorance and superstition, weighed down but rarely cared for by the "Rolls-Royce" administration that was ruling our "bullock-cart" country. As a result of this neglect and as a result of the sudden impact of Western mass production system, our village economy has been crippled and our agriculture deteriorated. And so we face to-day a serious food situation, the out-put of food materials having not kept pace with the increase in population. The existing deplorable condition of our villages can be summed up in the words of Gandhiji, "Divorce between intelligence and labour has resulted in a criminal negligence of the villages. And so, instead of having graceful hamlets dotting the land, we have dung heaps. The very approach to many villages is not a refreshing experience; often one would like to shut one's eyes and stuff one's nose. Such is the surrounding dirt and offending smell."

Since the assumption of power by the Congress Ministries, attempts are being made to rebuild our villages and enliven our village life. But much headway has been made in most places largely due to the fact that there is no well defined development scheme, no proper co-ordination and lack of trained, young and enthusiastic personnel to carry out the scheme. I give below a broad outline of a plan for rural reconstruction.

Ideals of The Plan

The recognition of the fact that human well-being and not mere material wealth constitutes the basis on which alone any sound and stable economic edifice can be built, should form the foundation for any rural uplift programme. The programme should promote self-development, cooperation and brotherliness among men. "The desire of the individual to gain wealth", as Dr. Bharatan Kumarappa has pointed out, "should be carefully curbed and made subordinate to the well-being of the community as a whole". This would imply the building up of a planned and decentralised economy resulting in the raising of the standard of living in villages. It is a paradox that the tillers of the soil who form the major portion of our population are getting poorer day by day whilst the Industrialist and merchant who are dependant on them, are getting ever richer. It is a known fact that the prosperity of any country depends on its natural and economic resources. The growing poverty of this land, inspite of its rich natural resources should be largely due to the uneconomic nature of our farming. How to make farming economically sound and make it conducive to the well-being of the country is the problem to be solved and is an essential aspect in any rural uplift programme.

In the upsurge of modernism, we, in India, should never forget one thing.

should be taken to improve our agricultural efficiency to fill up this gap in our national economy. We have plenty of land and labour but still our food output is low. This is due to the fact that our soils in most places have reached the minimum fertility gradient owing to the fact that the minerals and nutrients lost by the soil to the crop are not replenished by judicious manuring. Further, Agriculture is in most places a 'gamble in rain' and our poor ryots are unable to invest much capital on the improvement of the land.

The first step to rectify this deplorable state of affairs is to introduce compulsory consolidation of holdings. The subdivision of holdings, beyond an optimum level which has to be fixed depending on the nature of land, should be prevented by legislation. Co-operative farming should be fostered as far as possible and where this is not possible, cheap credit facilities should be made available to the ryots for purposes of meeting cultivation expenses. Apart from the Agricultural Department, the Co-operative and Development Departments should be manned with agricultural graduates so that they can propagate improved methods of farming. There is no doubt that with the adoption of scientific methods of cultivation, viz, use of good seeds produced by the breeding stations, judicious and adequate manuring following a proper rotation of crops, etc., the yield of the land can be highly increased. More importance should be given to the use of good seeds than is at present done and plant breeding work should be carried on with greater intensity so as to produce the best type of seeds suitable to our soil and climatic conditions. In places where the acreage is very large and time available for cultivation is short, it may be necessary to resort to mechanised farming and in such areas the village co-operative societies should own tractors and make it available to the ryots at nominal rates of rent.

It is really shameful that it is necessary for our representatives to go out to foreign countries periodically a-begging for food grains, inspite of the fact that ours is a predominantly agricultural country with vast resources in this field. It is time that our provincial governments set out with the task of radically reorienting their agricultural policies and try to do real work instead of dissipating much energy on paper schemes. In this task, the Government should seek the help of young, qualified, enthusiastic persons, who will work with zeal and sincerety and not merely for salary.

(3) *Better business*:—The standard of living of the average villager is extremely low and should be raised, if a stable economic edifice is to be built in our country, as it has been realised that the very existence of industry will depend upon the prosperity of the farmers. The most important step in this direction is the revival of cottage industries which have gradually disappeared since the advent of British rule in this country. Taking to spinning and weaving during the idle hours will not only add to the villager's meagre income but also go a long way in making the village self-sufficient in regard to its cloth requirements. The villagers should also be advised to adopt mixed farming which will aid in the breeding of good cows and also serve as a subsidiary mode of income. There are many other industries which can be developed as subsidiary occupations for the agriculturists. Among the more important cottage industries are fruit canning, lac-culture, sericulture, poultry-farming, apiculture, mat-weaving, the production of woollen goods, etc. For purposes of marketing the products of these village industries, co-operative societies should be organised. The state should also provide safe-guards to these by way of restricting the imports of goods which can be manufactured by these industries.

Lastly, the government should meet out a fair deal to the agriculturist. The ryots should get a just price for their produce. At present, the government, while putting down the prices of agricultural commodities, are placing no limits to the profits of businessmen. During the past few years, inspite of the rise in price, many of the average agriculturists have not even been able to wipe off their prior debts, while many of the merchants have turned millionaires overnight. Our Government should put a check to the limits of exploitation by these industrialists and businessmen and try to bridge the ever-increasing gulf between the rich and the poor. The producers should be assured of a reasonable margin of profit, if they are to be induced to grow more food.

There is also the necessity to enforce social reforms so as to remove all distinctions due to class or creed. Prohibition should be brought into effect in all places, thereby preventing the frittering away of the poor income of the villagers. Village development work is of national importance and Congress Ministries which are wedded to the policy of the upliftment of the living conditions of the masses can hardly afford to ignore the apalling conditions prevailing in village India. I am sure if proper development plans are undertaken on the lines indicated in this article, we can fulfil Gandhiji's desire to see "lovely hamlets dotting the land".

FUNDAMENTALS OF AGRICULTURAL ECONOMIC PLANNING IN INDIA

By: *Prof.* K. N. Vaswani

Agricultural Planning-Why?

LAISSEZ Faire is an outworn economic creed to-day. The gospel of Planning has gone to the heart of modern man and is the accepted faith to-day. Economic Planning, for long in the air, is now the actual policy of progressive nations of the world. The day of Agricultural Economic Planning, too, has dawned; or rather the world, is overtaken by surprise at its sudden dawning. For, food shortage everywhere and famine conditions somewhere, have brought home to the hearts and sad minds of men and statesmen, the need for agricultural economic planning, as an immediate and urgent need, to avoid disaster, such as overwhelmed the unfortunate people of poor Bengal.

The Plight of the Agriculturist

The Agriculturist who carries the burden of the earth on his sturdy shoulders, who is the base of all economic life, specially our economic life in India, has yet suffered terribly, from our criminal neglect. He, who has been producing for all, has been left with nothing that he may eat; he, who has been clothing all, has nothing that he can clothe himself

"The problem before our country", to quote Pandit Jawaharlal Nehru, "is not just how to increase the volume of production; the problem is also how to provide work for the millions who are unemployed or underemployed. It is better to find employment for a large number of people at low income level than to keep most of them unemployed". The development of rural industries and the protection of the same by seeing that the power industries do not develop to such an extent as to jeopardise the very existence of agriculture and cottage industries, form an important step in raising the standard of living of the average villager. A proper co-ordination between agriculture and industry is highly essential. Industry should not stifle agriculture and agriculture should stimulate industry. The growing of money crops, which introduce a serious amount of uncertainty in our economic life, should be controlled by considerations like our industrial needs and the export policy of the Central Government. As far as possible, regional self-sufficiency is to be aimed at, so as to avoid the recurrence of famines in case of break-down of transport facilities during abnormal conditions. The village should, as a unit, be self-sufficient in its needs at least in essential food commodities.

For the programme of rebuilding to be carried out, co-operative organisations are essential. The Chinese "Indusco" is an eye-opener to us regarding the potentialities of such organisations and we can profit by adapting the Chinese method to our conditions. A well planned rural uplift scheme embodying the above ideals must be the corner stone of the economic policy of our Government.

Precautions to be taken

The programme of village improvement should be carefully worked out in all its details and the improvements that are suggested should be thoroughly suited to local conditions and in keeping with age-long culture and civilisation of the villagers. The "Gurgaon experiment" of Mr. F. L. Brayne did not meet with the expected results because there was not a well-laid out programme adaptable to the peculiar conditions of each village and also because there were not enough trained personnel to carry out the scheme. It is also necessary that adequate propaganda is done in the villages and all misapprehensions regarding the Development Scheme should be completely dispelled, if at all the Scheme is to work successfully. Too often in the past have well intentioned schemes and measures floundered on the rock of the villagers' inertia, that we can hardly be justified in not paying sufficient attention to this problem. An army of sincere, educated and self-less workers would be required to carry on this task of doing propaganda among the villagers. The whole scheme of work in the direction can be summed up in the words of Sir Manilal B. Nanavatti, "The ground has to be prepared for the reception of any scheme by the people. This would necessitate action in three directions, viz., improvement of the human factor in agriculture for raising the agricultural efficiency, constructive measures to ensure an intensive study of the rural problems and development of agencies for ensuring the co-operation of the people themselves." Action along these lines should precede the working of the programme for rebuilding our villages.

Programme for development

Our aim is to promote "Better farming, better business and a better living"

in villages. Hence the programme should have a three pronged objective.

Better living:—Living conditions in our villages are far from satisfactory and should be bettered if the campaign 'Back to the village' is to be a success. Conditions should be congenial for leading a happy and normal life in the villages and the bare necessities and amenities of life should be provided. The first step in this direction is the improvement of rural communications. The existing village roads are all in a dilapidated condition and most of our villages are inaccessible during rainy months owing to the fact that many of the rivers lying across these roads remain unbridged. The construction of good roads and bridges leading to the rural parts is an urgent necessity. In this connection, I will plead for the laying of roads with concrete ways as has been done in Europe. It has been proved by reliable statistics that crete ways, though slightly more expensive in the first instance, are the most economical form of construction, apart from the fact that they constitute the best form of rural roads. Most of the village roads are at present under the care and management of the District Boards and other Local Bodies and these have proved in majority of places their incompetence to maintain the roads in good condition, whatever may be the reasons. Hence it is advisable that the Provincial Governments take over the responsibility for the construction and maintenance of these roads. The common man is not worried as to who is in charge of these roads. What he wants is a good road leading to the village parts to which place he has to cart his manure, etc., and from where he has to transport his produce for sale.

The village houses should be remodelled and rebuilt, wherever necessary, on scientific lines and a planned policy should be executed in this direction. Better lighting facilities by a systematic expansion of rural electric supply should be aimed at. The necessary power can be generated by completing all the possible hydro-electric projects in our country. Where this is not possible, small plants for generation of electricity can be installed in central places and these may be made to supply the necessary power to a group of nearby villages. The availability of electric power is very essential for agricultural development as, with electric power available, electric motors can be installed in the wells and thereby the conversion of dry lands into garden lands will be rendered possible. Also, electric power is very essential for the development of cottage industries.

Rural dispensaries should be started and there should be at least one doctor and a mid-wife in each village to take care of the health of the rural population. Illiteracy should be wiped out by organising village schools preferably on the model of the basic education scheme. Co-operative sale and credit societies should be started and these should cater to all the needs of the villagers and also meet the credit requirements of the ryot for purpose of meeting cultivation expenses. A marketing society should be organised for a group of nearby villages so that ryots may sell their produce at a reasonable rate and may be free from the exploitation of the middle men. Lastly, avenues for recreation should be created so that village life may be happy and not dull and boring.

2. *Better Farming*:—Our country is not self-sufficient with regard to our food requirements at present and hence steps

with; though the source of wealth to others, he is without wealth; he is called the son of the soil, but he is without a patch of land that he can call his own. Indebted as we all are to him, for food and cloth and the raw materials of our industries, the commodities for our trade and commerce, it is he, who bears the great crushing burden of debt on his bent shoulders; taxing himself to the utmost, to make both ends meet. He is again, who is taxed most, paying duty even on his bit of salt, while we enjoy exemption from income tax, if we earn but Rs. 2,000/- a year, as though he earns more.

Agriculture—A Depressed Industry

We have begun to feel ashamed of our Depressed classes and are now stoning for our shame by a determined effort for their uplift. It is time we felt the shame of our main staple industry, agriculture, being a depressed industry, stunted in its growth, backward in its ways. If stung into this realisation, by the tragedy of the Bengal Famine, if goaded into sustained activity by the present food shortages, if made conscious now of the sad state of our agriculture and the pitiable plight of our agriculturist, we, even now, pursue wisely and deliberately, vigorously and energetically, the path of planning our agriculture in accordance with sound principles, so as to make it progressive and profitable, we would have laid the foundations of a peaceful, progressive and prosperous India. This would not have only paved the way for the wealth but also for the welfare of our exploited and indigent agricultural masses; and the terrible price in the cost of human life and misery that we have paid in the Bengal Famine, would not have been paid invain.

Sociological Planning

The first fundamental of our agricultural economic planning in India, the gross neglect of which is chiefly responsible for the complete failure or insignificant success of our efforts in the sphere of agricultural development in India, is no other than this—that our agricultural planning has been purely, narrowly economic, or mainly, merely technical. This has been a bad blunder, a costly and sad mistake. Thus, Dr. Burns' "Report on Agricultural Development in India," good otherwise, deals yet, only with technological possibilities of Agriculture.

Reminders of Ranade

We seem to need a new Ranade to remind us of the realities in India, to point out, *that unlike as in America, agriculture in India, is not a mere occupation or business for earning one's livelihood, but a way of life.* Sir Deshmukh, Governor of Reserve Bank of India, while inaugurating the 4th Conference of the Indian Society of Agricultural Economics at Walchandnagar, did well in emphasising "the importance of the sociological aspects of agriculture, over and above the economic and technical."

Sam Higginbottam, Director of Agricultural Institute, Allahabad, though a foreigner, was yet able to see and to say that, "the economic consequences of social custom and emotional response in India were colossal"—for he had lived long enough in India and studied with sympathy and understanding the agrarian conditions in our country. The first fundamental, therefore, of agricultural planning in India, is, as Sir Nanavati points out, that it has to be *"on a sociological basis, covering the whole man and*

every aspect of his life, neither economic alone, nor technical alone."

Aspects of Agricultural Planning

Planning cannot even be agricultural alone; for, agriculture itself is dovetailed with commerce—we have commercial crops, and problems of marketing, even in and specially in agriculture.

Agriculture is equally interwoven with industry, we have agricultural industries and if we have no well-developed industries, there is extreme pressure of population on agriculture, which makes all efforts at its reorganisation impossible and infructuous, as we know to our great cost and misery in India.

Agriculture is intertwined with transport too, for if transport facilities are absent, agricultural commodities, if abundant, perish for want of buyers or fetch low prices for our agriculturists, who must sell on the spot, rather than face inconvenience and risk, involved in tardy, difficult transport.

Agriculture is not even apart from culture, social outlook and environment, for these impinge heavily on agriculture. If uncultured and uncultivated, if caste-ridden and superstitious, illiterate and fanatical, the agriculturist loses in unnecessary brawls and foolish feuds, in wasteful ceremonial and imprudent festivity, in litigation and loutish behaviour, what he would, otherwise, have gained from agriculture.

Multilateral Planning

If the first fundamental of agricultural planning in India, is that it shall be neither technical alone, no economic alone, but sociological—being psychological as well as cultural—the second fundamental of agricultural planning is, that it must be not only agricultural, but also industrial and commercial and even financial, for, is not the basic problem in Indian agriculture, the problem of agricultural credit and debt?

Simultaneous Unified Planning

The third fundamental of agricultural planning in India is that planning must be simultaneous, not piece-meal, full-bodied and full-blooded and not half-hearted and halting. If our agricultural planning is not all-round, but one-sided, is not comprehensive but narrow, centred on just one single segment of life, or some few aspects of it only, then not only do we not reach our objectives, not only are our efforts going to be bereft of expected results, but we really defeat our own ends.

The Co-operative Movement in India

An example is the co-operative movement in India, which was, at one time, regarded as the panacea of all our agricultural and economic ills, so much so that it was said, *"If Co-operation fails, there will fail, the best of Rural India."* And co-operation was tried: co-operative societies were created all over India, but they failed to solve the problems of agricultural and rural debt,—agricultural and rural credit. Co-operation had failed—so it was said. Did co-operation really fail? No, co-operation had never really been tried, it had not received a fair trial at all.

Only Co-operative Credit Societies had been formed. Co-operating in Credit had been tried and what wonder if it failed? Only one segment of life was touched and what transformation in life, could be expected? You cannot make a poor man rich, by giving him an amount of money; he may gamble it away, or drink it off, if he is not of a stable character. Co-operation in credit only, what could it do, if there was no co-operation in making the agriculturist more thrifty, more enlightened?

If there was no Co-operation in marketing, in production, in consumption,—what could Co-operation in Credit alone, accomplish?

Synthetic Integrated Planning

The Agricultural Credit Department of the Reserve Bank of India, put its expert finger on the sore spot, diagnosed the malady well, when they pointed out that Co-operation did not work, because it was limited, narrow, confined to just one segment of life. What was needed, what would work, was not the Co-operative Credit Society, with its narrow, Credit-centred approach, but a multi-purpose Society, nay, as has been pointed out, what will achieve results, is the Better-Living Society, which seeks to comprehend within its scope, the entire life of the agriculturist.

Specialisation would not do; integration is the need. Despite its divisions and its diversities, probably because of them, India is the land of Synthesis. Not separation or partition but integration and coordination is the cult that will work in agrarian, in rural India. *Functional integration, the comprehension of the multiple aspects and spheres of life, in one close, vital, life-giving, not, a crushing and killing embrace, in rural areas, in agricultural life, is the key to Agricultural planning in India, is the foundation, the fore-most fundamental of Agricultural planning in India.*

PLAN FOR THE DEVELOPMENT OF VILLAGE SHIWAL IN BURHANPUR TAHSIL (C. P.)

By: R. S. Shiwalkar

Note :— It is a welcome sign of the time that many Constructive Workers actuated by the purest love of service to the villages are undertaking strenuous surveys and studies of village conditions in our Country in order to improve them. The present article is the result of the detailed survey and study of his village Shiwal in C. P. and Berar by Mr. Shiwalkar. The valuable material and information offered by these Voluntary Surveys will, we have no doubt, provide very useful guidance to Various Government administratives in formulating their policies for the development of the Country-side —*Editor.*

THE one object of an economic plan is to free the population from poverty, disease and ignorance, that is every individual living in the village should have adequate resources and means at his command to pay for all the essentials of life necessary for himself and his dependants so that everybody gets nutritious and well balanced food, enough clothing, a house to accommodate himself, his dependants, his animals and other things, protecting them all from the vagaries of climate in each season. In addition every villager should have such medical aid as would keep him, his dependants and animals free from diseases and epidemics. Similarly all boys and girls of School-going age as well as some of the elderly persons should have an opportunity to be literate or to be able to read and write letters and read newspapers, magazines and books like "Ramayan", "Dasbodh", "Udyam" etc. and maintain simple accounts of their business. To accomplish this object, purchasing power of the village people has to be considerably enhanced by harnessing all the available and dormant

resources and utilizing the same effectively and efficiently so that they become economically useful to the population and serve as a permanent solution to drive away the demon of poverty. All the workers should have equal opportunities to employ themselves fully so that efficient application of their labour will bring them the necessary purchasing power to raise their standard of life, both material and cultural, as desired. Once the people are on the path of material prosperity, moral and cultural development will automatically follow with slight effort in that direction.

Agencies

For the economic development of a village, coordinated activities of all the agencies concerned are called for. The different agencies which are responsible for the development activities of a village are as follows:—

(a) The Government,
(b) The Local Bodies, and
(c) The People themselves.

(a) *The Government:*—Among the primary functions of a civilised Government besides defence, communication occupies a very important place. There was a time when villages in India without any facilities for communication could be very prosperous on account of the self sufficient and subsistence type of economic character suitably prevailing then in the country. Times are dynamic, conditions change very fast and consequently villages and their economic activities need to be organized to-day in relation to international considerations. On this account economic prosperity of a village depends upon the way in which it is linked with important market centres and other places. Railway, Roads and Postal facilities form the chief means of communications these days in so far as rural areas are concerned.

The village, Shiwal, is situated five miles away from the Railway Station, Mandwa, on the North-East Main Line of the G. I. P. Railway. The Railway cannot be brought nearer than the existing distance. But the village is not served by any road in a close vicinity. The nearest road is about twelve miles from Shiwal. The village is, therefore, not only cut off from the important markets during rains but is not easily accessible in other seasons as well. The tract as a whole has been completely neglected in this respect so far. It is, thus, expected that the Government will provide this tract with at least one all weather road of about sixteen miles upto Burhanpur and one road upto the Railway Station Mandwa in their Road Construction programmes.

Another need of the village and the tract in general owing to its malarious nature is the establishment of one anti-malaria centre either in the village or in a very close proximity. As described and pointed out previously it is very necessary to save the loss of life and loss of economic efficiency of workers on account of malaria prevalent in this region of the Province. The Provincial Government should, therefore, open an anti-malaria centre at or round about the village so that easy medical aid would be available to all classes of people at all the seasons of the year. So is the need for Veterinary assistance in this region with a larger number of cattle than those reared in many other parts.

The third and the most important function of the Government in furthering development activities of a village is to initiate a well studied economic policy,

carefully watch its progress, and encourage speedy constructive action on proper lines by introducing legislation--revolutionary legislation even, if necessary. Financial aid, technical assistance, price security, market control, etc., will all rest with the Government who would be looked upon for all the necessary help of this nature.

(b) *Local bodies:*- A distinct line of demarcation cannot be drawn to distinguish the functions of the Government from those of local bodies. The Government have delegated some of their powers to enable local bodies to conduct the allotted activities satisfactorily. The local bodies like the District Council and Tahsil Boards have been in charge of Education-Rural Education at present. In dealing with the Health and Education problems of the village emphasis has been laid down upon the need for a Primary School to promote literary development of the village to a certain extent. Maintenance of Cattle pounds and such other help from those bodies is a necessity.

(c) ***The people themselves:***-Prosperity of a village entirely depends upon the response received from the people themselves. In their own interest they have to unite together, by forgetting the differences, if any, not only to oppose the wrong done to them but also to fully shoulder the responsibility they have to share. The villagers must pool all the resources, utilize them economically to enhance production and organize equitable distribution, do away with the middleman as far as possible and create an atmosphere in the village in which people would feel that life is worth living and that it is not full of drudgery and disease as at present. Gram Panchayat will be the organization of the people and working for the people maintaining the solidarity of the village people on all fronts—economic, social, and religious. The Panchayat receiving its powers from the Government should, therefore, be an ideal one to control and guide the activities for the all sided development of the village within as less a period as possible. Real hope of India-particularly Rural India—lies in the efficiency and successful working of these Village Panchayats.

Economic Policy for the Village

Utilization of all the productive resources of the village, providing full employment to the working population, thereby enabling the people to earn for themselves the minimum needs of their lives, have been the guiding principles in offering suggestions for the development of the village. As seen previously, Agriculture with animal care, Rusa Oil distillation, collection of Tendu leaves and service, are the chief occupations employing the workers of the village. In the manner in which the economic activities are conducted at present, the avenues bring a very meagre income of about Rs. 44/- per head per annum keeping almost one third of the workers unemployed on an average throughout the year. Introduction of any new avenues of employment in the form of an industry not being possible, the following suggestions are made to secure better income by avoiding all wasteful and unsystematic methods noticed in utilizing the natural resources of the village.

(a) *Agriculture*:—This is the chief occupation and the backbone of the economic life of the village. Whatever the cultural practices and methods may be it is noted with concern that out of the total occupied area of 1856 acres only 1346 acres or 73 percent of the land are actually

cropped while 510 acres or 28 percent are allowed to remain fallow. Does this not mean wastage of natural resources. And what is the reason for this? The answer has been given in the remark that it is the absentee land-holders who are responsible for this immense loss. It may be recalled that the intricate problem of land management has become very complicated on account of the presence of absentee land-holders possessing about one third of the total occupied area of the village Shiwal. It remains to be seen if the great wastage of land caused every year in the village on this account could be prevented or not. The answer is in the affirmative but very bold and revolutionary steps would be required to be taken to achieve the object of full utilization of village land. Studying the history of the agriculturally developed countries for the last two centuries and applying the principles to suit our conditions, I believe, the only remedy to prevent any further wastage lies in the establishment of owner operated farms and maintenance of holdings of given maximum and minimum sizes. Nothing should be done for the present to disturb the land-holders of the village owning land below the minimum size. Sufficient time—say a period of about three to five years—may be allowed to these small holders to increase the size of their holdings. The absentee land-holders must, of course, be dealt with immediately. Their holdings should be redistributed to the land-holders of the village and some of the landless cultivators or tenants, preference being given to small holders, so that the holdings of very small sizes would be enlarged. Similarly all the land held by some of the village land-holders above the maximum size—say above 100 acres each—should also be distributed to the small land-holders of the village.

In the village under enquiry, there are 36 families possessing holdings below the size of 20 acres each with the total area of 297 acres. Having fixed the lowest limit of a holding at 20 acres each these 36 families would require additional 423 acres of land to make all the holdings of the required minimum size. There are two families in the village possessing 346 acres of land, size of each holding exceeding the maximum limit of 100 acres. Therefore, 146 acres of land owned by these village land-holders in addition to 648 acres of land owned by outside land-holders or absentee landholders making a total of 784 acres of land, are available for redistribution in the village. Allocating 423 acres out of this land to the small landholders to make up the size of their holdings of 20 acres each, 361 acres would remain for further distribution. Some of the outsider landholders may in this case desire to reside in the village and operate their own holdings. Such of the landholders may be permitted to do so on the specific undertaking that they would operate their land themselves. Not more than five families holding about 160 acres of land are expected to come to the village. The remaining 200 acres of land would be distributed to the ten landless tenant families who have the animals and equipment necessary to operate land. In the distribution of land utmost care and vigilence are necessary not only in maintaining the size of holding but also in allotting consolidated blocks of land to new as well as old land-holders. During the process of distribution, therefore, the fragmented holdings of the village land-holders could also be got consolidated. Thus at the end of the process, the total

village land of 1856 acres could be held by 67 families (52 existing village landholders, 10 from the landless class of the village and 5 from outside holders), all residing in the village having their holdings from the minimum size of 20 acres to the maximum of 100 acres, all the holdings in consolidated blocks and operated by the owners themselves. To bring about this change in the ownership of land and to prevent deterioration in the state of affairs again, radical legislation accompanied by arrangements for compensation to the dispossessed land holders and credit facilities for the purchasers of land to pay for the land and subsequent improvement to be effected in the same. Without being harsh to the dispossessed landowners payment may be made to them in five equal instalments, so that they can make use of these receipts to engage and adapt themselves to some suitable profession during this period. Payment, of course, will have to be made either by the State or by a credit organization instituted for this purpose just like the Land Mortgage Bank. Out of 784 acres of land planned to be redistributed, 160 acres would be allotted to the owners coming from outside. Compensation would need, therefore, to be paid for 624 acres only. Assuming a flat rate of Rs. 150/- per acre on an average (details to be worked later) Rs. 93,600/- would be required to be paid as compensation in five years, annual payment being Rs. 18,720/- only. Repayment of this amount would not be made from the very first year. On the contrary, if necessary, additional loan would be granted to the land holders to bring about permanent land improvement in their holdings during the first few years. The land holders will thus be given a chance and in some cases, if found necessary, compelled to improve their lands, equip themselves adequately and utilize their holdings fully within a period of about three to five years. After this period the buyers of land will be called upon to repay the debts in easy instalments spread over a period of twenty years, so that the usual and special, cultural and land improvement operations are not impaired in any way on account of this burden. These are the broad outlines of the scheme, details of which would be worked out under the directions of proper persons by the contemplated Gram Panchayat which will control these activities and their working.

One point needs elucidation in this connection. Ownership of land is not the end in itself which can accomplish the object of full utilization of land. As a matter of fact ownership merely provides the psychological back ground for the workers and entrepreneurs to put maximum efforts to earn maximum output from land or the means he has. Ownership of land will, thus, be an incentive to the farming community in the village to undertake land improvement and to adopt better standards of cultivation. Land improvements will include levelling, terracing, construction and erection of small or big bunds to check washings and erosion of land, arrangement for drainage, suitable lay out of land, eradication of weeds etc. etc. In respect of the technique of cultivation there is hardly any improvement necessary in the implements used and practices adopted by the standard farmers of the village with slight modifications here and there. The only point that needs to be stressed is the regular and systematic application of manure in adequate quantities to land. Abnormally low yields of crops in Indian Agriculture has become an

established fact and an abuse to the Indian farmer. Very low percentage of organic matter and general impoverishment of the soil, I believe, is truely attributed to be the cause responsible for the low returns from land. With the experience of over a decade, I have arrived at the conclusion that every piece of land, other than the irrigated or otherwise double cropped area should receive atleast 20 cartloads or 7 tons of cattle dung manure once in three years, i. e., one third of the area cropped by an individual must be manured at the rate of 20 cartloads per acre every year. Out of about 1800 acres under non-irrigated crops in this village 600 acres of land, therefore, must receive 12,000 cartloads of cattledung and allied compost manure every year, with suitable rotation of crops to permit natural renovation of the soil to the maximum. In addition to this the irrigated area of about 56 acres of land should receive about 2800 cart loads of the cattle dung and compost manures at the rate of 50 cart loads of cattledung and compost manures per annum. If not all, a major portion of this quantity of manure must be produced in the village by conserving every available dropping of each animal and by converting even a handful of the organic waste material into compost manure. The Sanitary and Veterinary departments of the Panchayat should encourage use of night soil either fresh or otherwise by making suitable arrangements taking into account the case, convenience and practicability of the method and the use of cattle urine by conserving and using it as urine earth. Thus more than two thirds of the requirement of the manure will be arranged for from all these sources put together. Collection of animal bones, preparing bonemeal by partial charring, importing oilcakes and other fertilizers, should be encouraged to be used as top dressings in orchards and vegetable crops to supplement the deficient supply of locally available manures.

Besides the policy of manuring necessary to improve the standard of cultivation, cropping has also to be regularised to ensure production as desired for the development of the village as a whole. Juar, Wheat, Paddy, Pulses, Cotton and Oilseeds being the important crops, both food and commercial crops are being grown in the village. With 1.14 acres of land required to produce enough food per person, the village having a population near about 600 persons, must grow food crops in about 684 acres to feed the villagers. About 75 acres to guard against emergency, about 70 acres to produce the quota of ten percent of its production as food for urban areas or non-food producing areas depending for their food supply upon the rural areas, and about 70 acres to grow seed for next year must be put down under food crops in addition to the above area, making the total area under food crops, i. e., Juar, Paddy, Wheat, and Pulses, to be 899 or say 900 acres. Out of the remaining 956 acres of land another 900 acres of land would be devolved to grow cotton, fodder-crops, oilseeds, mostly til, fibre crops like Ambadi and Sann hemp etc. and 56 acres would be utilized in growing irrigated crops, like fruits and vegetables commanded by ten wells with ordinary lifts-leather motes and Persian Wheels or Rahats. The wells are almost in readiness except slight repairs to a few, after which all of them can very well be used to irrigate land. As long as the village is cut off from the marketing centres fruits and

vegetables having good lasting quantities may alone be raised for the distant markets while all kinds of fruits and vegetables to satisfy local needs should also be raised so that the people are taught to eat more vegetables and fruits necessary to maintain their health and to fight against diseases to which they fall a very easy prey. In the cropping programme of the village, therefore, 56 acres under garden crops would be operated by 10 holders. Of the area under non-irrigated crops fifty percent would be utilized to raise food crops and the remaining fifty percent would grow cotton, til, Ambadi, Sann-hemp, groundnut, etc.

(b) *Subsidiary occupations*:-At present Rusa Oil distillation and collection of Tendu leaves are the only subsidiary occupations of the village. Both the Forest Industries should be continued, as they provide the village workers with employment at a period when there is partial or complete slackness in agricultural operations. The only change desired is that the industries should be conducted by the villagers themselves. A co-operative organisation may be set up with this object in view so that the profits accruing from the industries will become available to the villagers themselves besides employment. Thus, the workers will be the owners and it is expected, they would work efficiently yielding perhaps more profits. Apart from these two Forest Industries one more subsidiary industry on commercial lines could easily be undertaken by enterprising and resourceful individuals in the village.

Cattle breeding on scientific lines should be undertaken by at least ten enterprising individuals with a herd of fifty selected cows and heifers available locally and a good Nimari bull each. Animals of Nimari breed are acclamatized and found suitable for the tract. Experience in cattle-breeding has revealed that the local animals and the Breeds to which they belong are the best in so far as they are well adapted to the existing climatic and fodder conditions of the region. It is, therefore, the local breeds which can thrive best under the most natural and consequently economical way of rearing them. Foreign breeds, though superior in merits require artificial conditions of rearing. Hence, Nimari breed should be given preference to all others. In addition to the ten complete herds, others may also keep a number of animals according to the needs and means of the owners. Gram Panchayat should be empowered to exercise rigid control over castration of all male calves, other than those to be brought up as bulls, between two or three years of age and other aspects of cattle improvement to ensure scientific breeding of cattle in the village. Though sufficient grazing is available owing to the situation of the village close to forest on the North and the West, raising of fodder crops, stall feeding during nights and during summer months, together with feeding of salt etc. to the animals should be paid attention to by each cattle owner, so that the animals will be maintained in a satisfactory condition. In return the owners would get cattle dung manure absolutely necessary for the successful raising of crops. Cattle breeding being taken up as a subsidiary occupation in the village, there would be an increase in the number of animals and it is expected that 1200 animals consisting of cows and buffaloes, bullocks and bulls, young and old, producing about six to seven thousand cart loads of manure to be supplemented by half the quantity of compost manure, both

together satisfying two thirds of the manurial requirement of the village as already described. In addition good bullocks over and above the requirement of the village will be available for sale outside. There is a constant demand for bullocks, cows, buffaloes, etc., from the adjoining district of East-Khandesh of Bombay Presidency and other parts of Burhanpur Tahsil itself. Whatever milk is produced as a result of better care and feeding of the cows it should be consumed by the owners and other persons in the village. Most of the buffalo milk would, however, be used in Ghee making to be consumed locally and surplus sent outside for sale. At least one buffalo herd comprising of about thirty to forty buffaloes and a buffalo bull should be reared in the village with less number of buffaloes owned by others. Though milk has no market in the village or near about, the milk product, Khawa or Mawa, has a great demand in the neighbouring towns where the product can be sent by Railway every day without much difficulty. Growing of fodder crops, ensilage and raising of green grasses, both seasonal and perennial during hot season, will make the industry very successful. The problem of manure and breeding of good animals specially plough bullocks both essential for the development of agriculture, must be taken up in such villages situated at some advantageous position of grazing facilities, perennial supply of water etc. as a subsidiary industry. Besides manure, the industry will bring income from sale of animals, and animal products and will provide employment to the workers of the village who are forced to be idle for one third of their period.

It is, thus, expected that the problem of unemployment and underemployment to the village workers would be solved by bringing the entire occupied area of 1856 acres of land under crops instead of 1346 acres as at present, by giving incentive to land improvements, and raising the standard of cultivation as described in the preceding pages together with utilizing all the spare time or the period of forced idleness in the subsidiary occupations.

(c) *Co-operative Organizations*:—For the successful conduct of some of the productive activities as well as to ensure economy in the otherwise wasteful processes in production like protection of crops etc. and also to ensure equitable distribution of the fruits of labour of all concerned, organization of co-operative societies for the different purposes is a necessity. But a better way of dealing with this problem would be to organize one multi-purpose society having its various branches to tackle all the above items and such others with the object of efficiency, economy and prevention from exploitation by others, e. g., to conduct the forest industries; to protect crops from wild animals, stray cattle, thieves, etc., to arrange for sale of commercial crop products like cotton, and surplus food grains and purchase of essential articles, to arrange for hire of utensils and implements required in production and so on.

In pursuing this economic policy outlined above, it is expected that there would be an increase in returns from all production branches, considerable saving in the cost of production and fair prices and wages on account of better distribution, ultimately resulting in a very substantial enhancement of income per worker and per individual as well. Owing to full utilization of land in a systematised and scientific way agricultural production

its day-to-day operations being ruled out of order. There is, however, a check on its general operations through the Minister and Parliament.

Parliamentary relationship to the nationalised industries is a characteristic form of democratic control. All establishing Acts empower the Minister to give directions of a general nature to the Boards when he considers it required in the national interest. The Chancellor of the Exchequer can give such directions to the Bank of England; the Minister of Fuel and Power to the Coal and Electricity Boards; and the Minister of Transport to the Transport Commission. Retention of this directive power in the Minister's hands enables him on the one hand to ensure that the national enterprise fits into, and carries out, the State economic plan, and on the other to protect the public credit which is involved, inasmuch as the State guarantees the enterprise's obligations. It enables the Minister to share in the formulation of the general plan and policy of the nationalised concerns, and to keep an overall check on its operations.

Equally important is the fact that because the Minister has this power he must answer to Parliament for the exercise of it. Under the British Parliamentary democracy every Minister is responsible to Parliament. There he can be questioned orally and the matters for which he is responsible can be debated. He must present to Parliament the annual accounts of the enterprises, which can then be debated, and he must inform Parliament of any directions he gives to the Boards. To the extent that public monies are involved, Parliamentary Committees can probe into the finances of the national enterprises.

Decentralisation

This Parliamentary check is a most important factor in the administration of nationalised industries. The difficulty is the maintenance of a correct balance between excessive interference and inadequate watchfulness. The success with which this is achieved depends upon the Minister. The most successful will refuse to answer questions regarding day-to-day operations and confine his responsibility to matters of major importance only. Thereby the responsibility, initiative and enterprise of the Boards, is respected and maintained. It is of equal importance that it reduces bureaucracy to a minimum.

Paper work is a disease that threatens every organ of government and the greater the remoteness from governmental control the greater the hope of escaping infection. Dual control by the Minister and Board is thereby avoided, the aim being to shun duplication at Ministerial level. National enterprises can, however, themselves develop symptoms of the paper disease through over-centralisation. To minimise this danger, although nationalisation has followed the pattern of the total acquisition of an industry and its administration by a central board, the tendency is to decentralise through the appointment of regional boards, and the delegation of the maximum of responsibility to them, and to break them down into the various units that make up the whole.

Consultative Committees

Parallel with Parliamentary control in Britain, an attempt has been made to develop consumer or user control. It is recognised that if nationalisation is to mean much to the community as a whole, the public concerned with the nationalised services or industries, must have a voice

in its operations. In all nationalising Acts provision is made for the establishment of consultative committees, both central and regional, on which serve representatives drawn from the affected sections of the community, notably local government, the trade associations, Chambers of Commerce, the trade unions and the like.

Such committees have no executive powers, but they possess the right to make representations to the Minister, who can direct the national enterprises to carry out their recommendations. Similarly, the Minister can ask the Committees to investigate relevant matters. In the case of transport, for instance, fares and charges, services and facilities would be subject to the review of such regional committees.

In this matter of consumer participation, British nationalised industry has gone far, in workers' participation it has not. Whereas a proportion of members of the administrative boards is drawn from the trade unions, and provision is made in the nationalisation measures for consultation with the workers, establishment of workers' councils is not mandatory. The machinery for worker consultation and participation is left to the Boards to determine. No pattern is laid down. Its extent consequently varies, and the problem facing nationalised industry is to eliminate the division between employer and worker, between management and employee.

Three Requisites

So far as nationalised industry is concerned there are three requisites to the instillation of a full sense of worker responsibility: political education, material benefits, and participation in management. Initially, mines nationalisation in Britain stimulated production because the miner had worked for nationalisation for decades and because he quickly experienced improved working conditions, including a five, instead of a five-and-a-half, day week, without reduction of pay. Until he enjoys the third requisite the full benefits may not be appreciated by him.

State purchase of industry in Britain has in every case been on the basis of a price fair both to the former owners and to the State. No less was paid to the owners than the value based on previous earnings or Stock Exchange quotations, and no more was paid by the State than was considered justified in the light of the future value, as judged by likely earnings. Thus, in the case of the Bank of England, with its hidden assets, the price was such as to guarantee continuation of the stockholders' past income; in the case of the coal mines it was based on the past earnings of the industry; and for the railways, Stock Exchange values were taken.

From the fact that the Government supporters attacked the compensation terms as being too generous, and that the Opposition claimed they were so ungenerous that they contained an element of confiscation, it would appear that the terms in every case were fair enough. Payment was made in State bonds, or bonds of the nationalised concerns, guaranteed by the State, of a value equivalent to the purchase price. That is to say, £100 of bonds would be exchanged for every £100 of the purchase price, irrespective of the income previously received. Since Government bonds carry only about 2½ per cent. interest, former owners who previously received larger incomes from the acquired concerns, suffered a diminution of income.

Administrative Scheme

Justification for this is the greater

would be more than double of the present output from land. Subsidiary industries and occupations would not only increase in number but the village people would be the owners of the industries, occupied in the same as workers and sharing the profits accruing from them. Economically, therefore, the low income of Rs. 44/- at present would be substituted by a figure exceeding Rs. 125/- per individual and the present underemployment and unemployment to the extent of 33 percent would vanish and give place to full employment for all the workers throughout the year with reasonable rest and leisure periods. Both the important problems of very low income per individual and unemployment prevalent in the village are in this way proposed to be solved.

In the concluding remarks, it has to be reiterated that if all the agencies, i. e., the State, the Local bodies, and the village Panchayats, coordinate their activities with the object of ameliorating the rural population in all the regions including the so far neglected backward tracts, it will not take very long to see the villages developed by implementing the economic policy described above. The village Panchayat has to be a very radical institution and organisation of the people conducting all the activities very boldly and with determination so that it accomplishes the object of all-sided development of the village within a reasonable period of time. In the beginning, however, instead of being very ambitious and hankering after utopia, let activities be concentrated upon systematising agriculture, the chief village industry and the backone of village economic life, and cattle breeding, an associated or allied industry for the development of village agriculture, and regularising other occupations, minimising middleman's exploitations. The State machinery and local bodies should arrange for roads, medical aid, veterinary assistance and education while the Panchayat should implement the economic policy and take care of village life in general, the activities of all these agencies aspiring for the material development of the village and cultural development of the villagers. Above all, the chief agency, i. e., the State, taking initiative in this direction should gradually relinquish the burden of its charge and unknowingly shift it on to the proper quarters. The only way to do so is to create a desire—a very strong desire—among the people of the village themselves to march forward, so that they would awaken from the deep slumber and begin to put in honest efforts to accomplish their object. This is the watch-word for true and lasting development of a village and the country at large, as 'salvation of India lies in cottages.'

USE
KAINITE
(POTASH — FERTILISER)
for
increasing all Root-Crops, Sugar-Cane, Paddy, Tobacco, Coffee, etc.
Manufactured by:
THE PIONEER MAGNESIA WORKS, LTD.
Telephone: 22843 | *Regd. Head Office:* Chartered Bank Bldg., 3rd Floor, Fort, BOMBAY 1. | *Telegram:* "MAGNESIA" BOMBAY.

NATIONALISATION IN BRITAIN

By: Ernest Davies, M. P.

Note:— The National Government of India and the Indian people will be called upon to adopt the policy of Nationalisation in this Country at no distant date. This article by Mr. Ernest Davies, M. P., Labour, which gives a vivid picture of the plan of Nationalisation in Great Britain will therefore be read with profit and interest:—*Editor.*

IN Britain today, nationalisation is being carried out according to plan. Since the advent of the Labour Government in July, 1945, the Bank of England, Civil Aviation, external cable and wireless communications, and the coal mines have become national enterprises. Both the Transport and Electricity industries are in process of nationalisation; and within the life of the present Government the iron and steel heavy industry will also become a national enterprise.

Nationalisation in Britain has been achieved by legislative action. Industries scheduled for nationalisation in the programme of the Labour Party, on which it fought and won the General Election of 1945, had to be acquired by purchase from their proprietors. Nationalisation involved the transfer of industry from private to public ownership, and with the transfer the former owners departed and the State's nominees took possession. Reorganisation followed.

Improvement Through Discussion

During the long legislative process which provides ample opportunity for careful deliberation and improvement through discussion, a common administrative pattern for British nationalised industry has evolved. For each of the national enterprises a Board is appointed by the responsible Minister to administer nationalised industry as a public corporation. Members of the Board are chosen by the Minister from among those with the necessary experience, the legislation often requiring that they be selected from certain fields of experience. For example, in the case of transport they were required to have had "wide experience and have shown capacity in transport, industrial, commercial or financial matters, in administration or in the organisation of workers".

There is no obligation imposed on the Minister to consult any outside association, political party or trade union. His is the sole power to appoint. In practice he has a wide choice when he chooses members for the administrative board and he includes former trade union officials among them. It might appear that this opens the way for political appointments but, since the Minister must inform Parliament of the appointments and must face its criticism, he dare not appoint other than those considered the best qualified for the task. The Chairman of the Coal Board is a former distinguished coal mines proprietor, Lord Hyndley; the head of the Electricity Board is the former General Secretary of the Trades Union Congress, Lord Citrine.

Commercial Lines

Once appointed, the Board is responsible for the operation of the industry on commercial lines. All subsequent appointments of executives, managers and staff are made by the Board. Neither the Minister nor any outside body can interfere. The Board is left free and independent to manage its own affairs, interference in

security enjoyed by State over private enterprise. National enterprises consequently start off with a financial advantage; the annual interest charges on their obligations is considerably less than the amount previously paid by the privately owned concerns. In the case of the railways, for example, the interest charges will amount to about £22,500,000 per annum compared with the £40,000,000 previously received by stockholders, a saving of £17,500,000 a year. This initial reduction in fixed charges should make it easier for the national enterprises to pay their way, an obligation imposed upon them in all the establishing legislation.

To sum up, nationalisation of industry in Britain is legalistic. It involves purchase of private enterprise by the State at a fair price and just to both parties. An administrative scheme has evolved in the form of the non-profit making, self-supporting public corporation. It ensures commercial operation with public accountability. Administration is entrusted to responsible executive boards subject to policy control at Ministerial level. The Boards have financial autonomy backed by public credit. The community, including consumer and worker, is given full opportunity to make representations concerning the operations of the enterprises and provision is made for consultation with the worker.

In Britain, nationalisation, travelling along the constitutional road, is progressing towards the democratisation and socialisation of industry. The transfer to public ownership of the Bank of England, the coal mines, transport, electricity, gas and heavy industry is only the beginning. If there is no change of Government in 1950 a second programme will commence.

COMPOSTING VS: DIRECT PLOUGHING IN OF REFUSE MATERIALS

By: Dr. C. N. Acharya

THERE appears to be a certain amount of uncertainty among farmers and even among scientific workers[1] in the field regarding the necessity for composting refuse materials before applying the same to land as manure. In the well-known practice of green manuring the paddy crop, the material is directly ploughed into the soil without any treatment. Howard[2] has recommended a system of Sheet Composting which is practically tantamount to ploughing the material into the land. Higginbottom[3] has recommended the trenching of refuse materials in the land itself. It is a common practice in certain areas of the country to plough town refuse (katchra) directly into the land, especially for growing potatoes in sandy tracts. Experimental trials carried out at Rothamsted as well as by the writer[4] in India have shown that under certain conditions it is possible to add uncomposted refuse (Urban and Rural) to the soil with beneficial results on succeeding crop growth.

1. Rural India, September 1947, pp. 301, 302.
2. An Agricultural Testament, 1942, Oxford University Press, pp. 92,227.
3. "Trenching" by Sam Higginbottom 1945 Kitabistan, Allahabad.
4. Pot culture experiments with Composted and uncomposted refuse materials—Indian Jour. Agr. Sci. vol, June 1946.

The above data and experience would apparently seem to contradict the need for subjecting the refuse materials to the process of composting before applying the same to land. Composting involves a certain amount of labour and it takes some months before the material matures into good manure. If it were possible to avoid the process and apply the refuse directly to land with the same beneficial results, there would be considerable simplification of procedure and saving in labour and time. Possibly the "organic" programme could be made to appeal to the farmer better by simplifying it as much as possible.

But in our efforts to popularise the use of organic matter on land, we must not lose sight of certain fundamental requirements of good husbandry or recommend an indiscriminate procedure which may do more harm than good to the crops. It is therefore necessary for the farmer to weigh the arguments for and against composting before deciding on the actual procedure to be followed by him on his farm.

(i) The most important consideration for a farmer is the presence of weed seeds in his refuse material. Both urban refuse (katchra) and farm refuse (litter and dung) are rich in weed seeds and considerable labour and time is spent in eradicating the weeds subsequently after such weed-rich refuse is applied to land as manure. It is therefore necessary that the refuse should be subjected to a proper process of composting which would generate enough heat to destroy the weed seeds. The labour and time spent in compost-making would more than repay the greater amount of labour and time that would be necessary subsequently to eradicate the weeds.

(ii) Secondly, there is the question of pathogenic organisms, which pertains especially to urban refuse. In some parts of the country, the habit of applying raw night-soil to land still persists but it would be agreed to all that this system is unhygienic and likely to lead to spread of serious diseases such as cholera, typhoid, dysentry etc. In China, the widespread infection of hook-worm, morbidity and intestinal disorders is attributed to the prevalent custom of applying raw night-soil to land. It is necessary to compost night-soil before utilising it as manure. Katchra (dry refuse) is less dangerous, but it is safe to compost this also before applying it to land. Town katchra usually contains a lot of undesirable materials such as glass, tin, broken porcelain, leather, etc., and it is difficult to remove these by sieving or hand-picking, while the katchra is raw. After composting, however, the above foreign materials could be easily removed by sieving through expanded metal or wire-mesh, and a fine type of manure equal to rich farmyard manure is obtained.

(iii) There is also the question of C/N ratio to be considered. Most farm and town wastes (omitting urine night-soil) are poor in nitrogen and possess rather wide C/N rations. Thus, straw possesses a C/N ratio of about 60 to 70, while sugarcane trash shows a C/N ratio as wide as 100 to 120. It has been experimentally shown that materials which possess C/N ratios wider than 15-20 fix the available nitrogen in the soil for their own use and render it unavailable to the succeeding crop, which naturally suffers. Thus, crop-yields may be actually lowered by indis-

criminate application of straw and sugarcane trash to land. In the process of compost-making the C/N of the refuse is brought down to a level of 15 or narrower and such manure releases available nitrogen from its own body and thus increases the quantity of nitrogen available to the crop in the soil. As such, the crop yield is increased by use of ripe manure. If composting is omitted, a long period of 4 to 6 months must be left for the refuse to decompose properly in the soil and in that period no crop can be grown. If there is no rainfall in the above period the refuse may not decompose at all in the soil.

(iv) There is also the highly important question of soil moisture. If large quantities of undecomposed straw or town katchra are added to the soil, these fix all the available moisture in the soil for their own decomposition. In the *barani* tracts of medium to low rainfall, it would be a highly risky business to apply undecomposed material to the soil, for it would hasten the failure of the succeeding crop. Only low doses of well decomposed manure should be applied to such lands. It is possible to apply undecomposed material only to lands under irrigation or where rainfall is abundant (say about 50") and the water supply is well distributed over the season so that it would provide for the requirements of the undecomposed materials as well as of the succeeding crop. This practice is mainly possible only in the paddy (rice) tracts, where green manuring is already a general practice.

(v) Another factor to be considered is the readiness of the land itself to receive the manure. This has to be applied to land only in the season, which may come once in 6 months or once a year. But farm refuse (e.g. litter, dung, urine-earth, weeds etc.) are being collected every day and would have to be properly stored till the time comes for their application to land. An efficient form of storage is practically tantamount to a simple form of compost-making.

If the system of compost making is to become popular among our farmers, villagers and municipalities, it should be quite simple and should minimise labour and attention as much as possible, so that the farmer treats it more as a method of storage than of composting. But at the same time it should achieve the main objects of compost-making viz. destruction of weed seeds and pathogenic organisms and narrowing of the C/N ratio to a level below 15. Such a simple system of compost-making as applied to urban and farm wastes has been described by the writer elsewhere[5,6] and is now widely propagated in this country under the Urban and Village Compost Schemes operated by the Provincial Governments and the Government of India. About 600 Municipalities and 8000 villages are already operating the above simple process with highly successful results and more are joining day by day.

5. Misc. Bull. No. 60 of the I.C.A.R., Manager of Govt. Publications, Delhi.

6. Indian Farming, May 1945 (p. 214) and December 1945 (p. 569).

PROGRESS REPORT OF THE KRISHNAGANJ VILLAGE UNIT, POHRI, GWALIOR

For the months of August, September & October 1947.

Cooperation

ONE of the most striking activities of the Unit during the period under report was the organisation of a Cooperative Bank—"Krishnaganj Cooperative Bank Ltd."—with multipurpose objects of controlling and coordinating all economic activities of the Unit. The Bank has been registered under the Cooperative Societies Act of the Gwalior Government. It has started a cooperative store named "Krishnaganj Sahkari Bhandar" to supply all the wants of the village people and to manage the sale of all their agricultural products in suitable markets.

Village Panchayats

Village Panchayats have been organised in each village to conduct the rural development activities of the Centre. Besides, there is a Central Unit Panchayat formed from the members of the village Panchayats. The following is the personnel of the Unit Panchayat:—

Pt. G. K. Puranik, Principal, Rural Workers' Training Institute—President, Bachchan Singha—Secretary, and Baushidhar Jain (Krishnaganj), Premraj (Jakhnod), Dev Chand (Jakhnod), Parsa Mehte (Gwalipura), Ratan Lal (Gwalipura), Pilua Mehte (Sonipura), Panna Mehte (Khod), Siria Mehte (Naygaon), Mana (Nayagaon), Prabhu Mehte (Randhir), Pilua Mehte (Benta), Bhola (Benti), Hira (Bhilgaon), Arjunlal Varma (Katra) and Kamarlal Gupta (Katra)—Members.

The Central Panchayat holds its monthly meetings to review the working of the Unit and gives directives to the Gram Pachayats to implement the seasonal programmes fixed on the basis of the annual plan.

Education

The Adarsha Vidyalaya is working as a Central Educational Institution for the Unit. Besides students from other villages and towns, 61 students are attending the Vidyalaya from the villages of the Unit. Effort is being made to enlist all boys and girls of school-going age to read in the Vidyalaya. A separate primary school is also being opened in Gwalipura to facilitate the attendance of young children from the surrounding villages.

An adult class to coach adults at night has been opened at Katra. On 31st October, 24 adults were on its rolls with an average attendance of 14.3 for the month.

Health and Sanitation

Constant propaganda was made to improve the sanitary condition of the villages. Amavasya and Purnima were observed as cleanliness days. At many places paths were levelled and pits were filled in. Drinking water wells were permanganated and kept clean. Free medical aid was provided at the Centre. During the period under report, 520 cases of malaria, Eczema, Diarrhea, Opthalmia, Dysentry, etc., were treated with perfectly satisfactory results.

Aid to Agriculture

Propaganda was made to use improved quality of seeds for the Rabi crop.

Those who failed to secure seed from their Sahukars were helped to obtain it from the Tahsil. The people are being induced to sell their Kharif crops through the Krishnaganj Cooperative Bank.

About 125 bighas of land which is lying uncultivated near Sonipura is being distributed among five cultivators, each with a plot of 25 bighas, where they would settle themselves and establish a Farm-Colony.

Cattle Breeding

Because of under-nourishment and ill feeding, the condition of cattle in summer becomes simply pathetic. The milching animals become dry and there is a great scarcity of milk. Most of the cattle reduce to skeleton and many die of starvation. To avoid this state of affairs, propaganda was made to stock at least two cart loads of grass per cattle head and reserve it for summer. Resolutions were passed to this effect by the Unit and Village Panchayats. The people are now trying to stock that quantity of fodder.

General

The village people celebrated the Independence Day on the 15th August with great enthusiasm. They hoisted National Flag in their villages and planted trees to commemorate that day. The Krishnaganj Sahkari Bhandar was also started on the same auspicious day.

BACHCHAN SINGHA,
Secretary,
UNIT PANCHAYAT.

SELF-RELIANCE—KEYNOTE OF DEMOCRACY

"It has always given me great pleasure to see private voluntary effort in the field of social service. There is today a tendency to look helplessly to the State for every kind of service, as if the community has no responsibility whatsoever in such matters. That is hardly the attitude of a self-reliant community. If democracy implies anything, it implies a community of sturdy, self-reliant individuals, capable not only of choosing intelligently and independently their own representatives to run their Government on their behalf, but also of helping themselves and one another. Undoubtedly the State is the greatest social service agency devised by the wisdom of man; but there are many nooks and crannies of society, many fields in which private agencies can do better, and therefore must play their part."

—Mr. B. G. KHER,
Premier of Bombay.

The Rural India, Volume X, No. 1 to 12

JANUARY, 1947 to DECEMBER, 1947.

INDEX

ARTICLES

Agrarian Reforms in India
—*Prof. L. P. Sinha* 338

Agricultural Economics in India
—*Prof.* K. *N. Vaswani* 194

Cattle in India-Development for dual purposes
—*H. J. Makhijani* 377

Cattle in India-Future Development of the Industry
—*H. J Makhijani* 122

Cattle in India-Problems of the Breeder
—*H. J. Makhijani* 227

Cattle in India-Problem of Numbers
—*H. J. Makhijani* 87

Collectivization Vs. Peasant Proprietorship.
—*M. R. Masani* 187

Composting Vs: Direct Ploughing in of Refuse Materials
Dr. C. N. Acharya 436

Compost-making, A new Method of Disposal of Town Wastes
—*J. A. Daji & R. B. Gode* 28

Contribution of Free India to world Peace and Happiness
—*R. G. Gupta* 295

Cooperative Housing
—*Maheshchand* 314

Cottage Industries, and a Plan for their Development (with particular reference to Hand-loom weaving)
—*R. S. Hooli* 166

Cottage Industries in India
—*Prof. R. V. Rao* 175

Economic Position of the Agricultural Labourer, The
—*L. R. Dua* 131

Fertilisers and their Place in the Agricultural Policy of the C. P. & Berar
—*Dr. K. G. Joshi* 54

Fishery development in Villages
—*Dr. S. T. Moses* 282

Five-year Plan for Educational extension in Gwalior, A
—*F. G. Pearce* 151

Food Crisis and Soil Fertility
Dr. N. R. Dhar 299

Forms of Agricultural Servitude
—*K. G. Siwaswamy* 351

Fruit-Growing in N. W. F. P.
—*K. S. Sayed Mohd. Ibrahim Shah* 95

Fundamentals of Agricultural Economic Planning in India
—*Prof. K. N. Vaswani* 421

Grow Green Fodders
—*Sarabhai Prataprai* 205

Grow More Fruits I
—*B. L. Choudhri* 198

Grow More Fruits II-Essentials of Fruit Gardening
—*B. L. Choudhri* 236

Grow More Fruits III-Preliminary Cultivation & Planting
—*B. L. Choudhri* 364 & 389

Grow More Fruits IV- Irrigation & Manuring —*B. L. Choudhri* 392

How to Improve the Local Breeds of Poultry in the Countryside
—*K. G. Phalke* 242

Immediate Problem, The-Self-Sufficiency in Food
—*Sir T. S. Venkatraman* 303

Improvement of Village Cattle
—*Sir Datar Singh* 343

In Defence of Khadi
—*K. S. Srikantan* 59

Introduction to the Village Plan, An
—*M. Meherullah* 17

Irrigation as a Precautionary Measure against Frost
—*S. B. Jadhav* 160

"Jai Somnath!"
—*K. M. Munshi* 414

Land Problem in Europe 173

Land Reforms
—*D. Krishna Iyengar* 24

Let's Pioneer! Constructive Workers!!
—*R. R. Keithahn* 336

Manuring of Potatoes to meet India's Shortage of Food crops
—*C. P. Gupta & Girdhari Lall* 387

Meeting the Food Shortage
—*Choudhri Mukhtar Singh* 273

Message of Horticulture
—*S. S. Bhat* 347

Minor Irrigation Tanks–Their Repairs and Upkeep
—*Rao Sahib G. Jogiraju* 157

Nationalisation in Britain
—*Ernest Davies* 433

One Year Plan for All–sided Development of Krishnaganj Village Unit Pohri (Gwalior)
—*The Trainees* 251 & 293

Palm–Candy from Far South
—*S. V. Kamat* 384

Panchayat-Ghar Institution, The
—*M. S. Randhawa* 11

Peep into Village Economy, A
—*G. B. Sirdeshpande* 81

Plan for the Development of Village Shiwal in Burhanpur Tahsil (C.P.)
—*R. S. Shiwalkar* 424

Planning Agriculture
—*H. J. Makhijani* 45

Planning for Cottage Industries
—*S. K. Kallapur* 32

Planning for the Country-Side
Shridhar Mishra 115

Plan for the Ploughman
—*P. C. Dutta* 85

Planning for Rural India
—*R. N. Muttoo* 145

Planning for Rural India (Comment)
—*V. K. Kogekar* 207

Postal System in Rural Areas
—*Bhikhalal Kapasi* 137

Principles of Planning
—*D. Krishna Iyengar* 82

Problem of Agricultural Labour
—*Shridhar Mishra* 69

Problems of Rural Credit
—*D. Krishna Iyengar* 222

Producers' Cooperative Societies
—*Maheshchand* 285

Profits from the Desert
—*R. K. Singh Paroda* 66

Programme for rebuilding Village India, A —*M. S. Swaminathan* 417

Promotion of Village Industries in Bombay 139

Prospects of Cooperative Movement
—*Prof. L. P. Sinha* 305

Prospectus of the Rural Workers' Training Institute 105 and 3rd cover page, April June and July issues

Reconstructional Effort
—*A. N. Raghavachar* 185

Reorientation of the Villages
—*P. S. Dravid* 271

Revolution in Rural America
—*R. R. Keithahn* 219

"Right Thing to do, The"
—*N. C. Tandan* 323

Rural Credit and Debt Legislation in U. P. —*Shridhar Mishra* 308

Rural Credit Organisations
—*D. Krishna Iyengar* 171

THE RURAL INDIA

Vol. XI No. 2] FEBRUARY, 1948 [Whole No. 109

"Salvation of India lies in Cottages"
—*Mahatma Gandhi.*

ECONOMIC DEMOCRACY IN ACTION

LAST year, the President of the Adarsh Seva Sangha had announced at its anniversary that the objective of the Sangha had changed from 'Rural Uplift Work' to the establishment of a New Order of Economic Democracy in the country, which envisaged economic and social justice to every citizen irrespective of birth, caste or creed. This year, the 28th anniversary celebrations of the Sangha, held at its head-quarters at Krishnaganj, Pohri (Gwalior) on the 12th of January 1948, provided a happy occasion to witness the working of the great ideal in practice. About one hundred workers, teachers and vaidyas working under the Sangha assembled in solemnity to pledge themselves anew to implement the noble ideal in their respective spheres.

The new order of Economic Democracy promises to provide the five basic essentials of life, viz. adequate nutritious food, decent clothing, sanitary housing and facilities for health and education to every citizen. These needs are deemed to be fulfilled by working on three principles (1) Service Motive, (2) Planned Life, and (3) Full Employment.

Addressing the gathering of the workers on the occasion, the President of the Sangha said, "This meeting of ours has a special significance. Before 15th August we were a slave people. But now we are free. We have therefore to conduct ourselves as free men and discharge our obligations that freedom has brought with it. Every action of ours must bear the stamp of our newly acquired freedom".

The New Policy

Enunciating the new policy of the Sangha with regard to Education and Medical Departments of Pohri Jagir now conducted under the Sangha, the President said, "The fundamental change that is envisaged under the new policy is the working of the Departments on the principles of Economic Democracy. The first principle of Economic Democracy is Service Motive. So far the actions of the workers of the departments were governed by personal profit motive. Personal monetary gain was their sole object. Whether there was any adequate return by them to the society, was never given any serious consideration. This resulted in the perpetuation of a low level of society and a lopsided economy. To remove this, service motive should take the place of profit motive. The individual should serve the society; and the society should meet his requirements. The passive attitude, that a teacher would teach a student if he attended the school and a doctor would treat a patient if he came to the dispensary, must be replaced by a vigorous and strong determination on the part of the teachers and doctors that no one in the area they serve will remain ignorant or sick. Ignorance and disease are the two great enemies of society, and they must be driven away from wherever they are found. Just as a soldier on duty is expected to give no quarter to the enemy anywhere, a teacher posted in a given area should let no one remain ignorant and the doctor should wipe off disease and squalor. If any one falls sick, he should be immediately attended to".

Continuing, the President said, "In the free countries of the West, there is cent per cent literacy and the average expectation of life is 64 or 66 years. Unfortunately in India, the percentage of literacy is as low as 12% and the average expectation of life is only 27 years. Now free as we are, we should lose no time in attaining the same standards as in the West as early as possible. Then alone would we be able to hold our heads high with honour and respect in the comity of free nations."

Planning

The Sangha has introduced planning in every sphere of its activity. The teacher, the doctor, the rural worker, each has his specific plan which is recorded in a special register with other statistical records denoting the standards to be achieved in a given period. All possible emphasis is laid on the attainment of 75% result in each case.

Planning is an essential and most effective and useful device for the attainment of any high object in a specified period. It received great impetus during the World War II. No country remained without a plan for its Post-War reconstruction. India too had her plans for development and construction. But unfortunately they failed to pass beyond the stage of printing and circulation. They could not be implemented partly because on the assumption of power by the National Government, it was faced by unprecedented communal troubles and refugee problems, and mainly because the planning authorities had no popular sanction behind them. They also lacked that grim determination and iron will which is an essential requisite for the execution of any big plans. The Indian National Congress has now appointed an Economic Programme Committee under the Chairmanship of Pt. Jawaharlal Nehru. Let us hope, in conjunction with the Planning Commission of the Central Government, it will prepare a blueprint for the country which will be immediately implemented. The regional and sectional plans prepared by public bodies and institutions like Adarsh Seva Sangha would greatly help and enhance the tempo of the execution of all-India plans.

Full Employment

Planning depends for its success on full utilisation of human and material resources. Nothing short of an all-out effort is required to be made to achieve high objectives. Full application of human energy is the foremost requisite. The Adarsh Seva Sangha is introducing 8 hours daily work for its workers. In the present clamour for minimising working hours and limiting them to 40 hours a week even in the case of labouring classes, the idea of working 8 hours a day may seem to be out-moded and absurd. But if the national wealth has to be increased fourfold to provide a civic minimum to every citizen, human energy has to be employed to its maximum capacity. Thus alone can we make up the leeway between our standards and the standards of other free nations. While increasing the hours of work, the Sangha has also increased the salary of its workers to the extent of 50% in some cases where it fell too short of a living wage. The aim of the Sangha is to increase the income of its workers with the increase in working efficiency. Unless working efficiency is improved, higher salaries will only mean a deficit economy.

While transferring the management of the Education and Medical Departments of Pohri Jagir to Adarsh Seva Sangha in December last, Raj Rajendra M. Nehalkar, the Master of the Jagir, wrote: "The duty of every administration is to attain the greatest measure of happiness and prosperity to its people, where even the lowliest of the low gets adequately all the civic amenities of life, food, cloth, shelter, health and education. This ideal can only be attained when the society is organised on the basis of Economic Democracy, i.e. Service Motive, Planned Life and Full Employment.

Works of public welfare are best performed by public institutions or public workers. They can never be done so well by Government servants. Even after spending much time and money, it is doubtful whether they will ever succeed and particularly in the matter of educating the masses. I never take education in the narrow sense as it is commonly understood. So long education is not widely diffused and the conduct and character of the people is not elevated by it, any right material progress or contentment and happiness in life are difficult to achieve.

Taking all these aspects into consideration as well as the currents of time, it is only proper that the work of public welfare be entrusted to such bodies or institutions as are actuated by genuine service motive and as have the desire as well as capacity to do such work.

The Adarsh Seva Sangha has been rendering public service for the last 27 years, keeping away from the temptation of power. Its activities fall beyond the purview of suspicion or rivalry. It would therefore be in the best public interest to hand over the management of the Departments of Education, Health, Communications and Irrigation of the Jagir to it. All the same, for the present the management of the Education and Medical Departments of the Jagir is being entrusted to it to begin with."

We are sure, the expectations of the Jagirdar Saheb will be more than fulfilled by the transfer of the departments to the Adarsh Seva Sangha, through which the real object of the Education and Medical Departments will be thoroughly served and Pohri Jagir will stand as a glorious and worthy example before the world for demonstrating the working of the establishment of the New Order of Economic Democracy.

NOTES

TRAINING FOR VILLAGE DEVELOPMENT

ELSEWHERE in this issue is published the Prospectus of the Rural Workers' Training Institute conducted by Adarsh Seva Sangha at Pohri (Gwalior), which commences its next training course for one year from the 1st of May 1948. Those intending to undergo such training will welcome the opportunity.

The Institute has been conducting long and short courses of training for many years. One batch of candidates is still receiving training. The students are specially initiated in the ways and methods of carrying out surveys; in planning for all round development on the basis of Economic Democracy and Social Security, and in working out the plans. The Institute lays more emphasis on practical knowledge and experience to be gained by the trainees by actually working in the villages under guidance rather than on theorising and lecturing commonly witnessed in our present-day Colleges and Universities. The Governments of the Provinces and States would be well advised to depute their candidates for training at the Institute.

The need of a trained personnel to undertake rural development work in the country can hardly be over-emphasised. It is a grave mistake to regard rural reconstruction work as something which any layman can do without any specialized knowledge or training. To treat it like this is to betray one's ignorance; for, there is no subject which is not covered by it. It embraces agriculture, horticulture, animal husbandry, co-operation, education, engineering, medical science, social science, knowledge of various

industries and so on and so forth. The village uplift work is a herculian task requiring the best of intellect and energy. The whole economic, social and cultural life of the village has to be evolved. A free India village cannot and should not remain a backward and outmoded village with its poverty, ignorance and insanitation. It must take rapid strides and march ahead to come in line with those of advanced countries of the world. It is simply unthinkable that our present deplorably low level could easily be raised without special efforts. The popular Governments must take special measures and the foremost among them to our mind is to have trained personnel to undertake the work.

It should be noted that special care is taken in selection of candidates for training. Only those who have the aptitude and inclination for village work and are prepared to undergo the hardships of village life should be selected. Besides educational and other qualifications, the selected candidates must also possess capacity for organisation, so that after their training they can organise rural development work in given areas. Such people may be selected by the Governments from among the officials and workers of the already existing Rural Development Departments and from Agriculture, Education, Cooperation, Veterinary, Health and the like Departments connected with nation-building work. We hope, the Governments and institutions as well as interested individuals will avail the opportunity for training offered by the Pohri Institute. Money spent over such training is the best national investment expected to bring heavy returns. It should never be grudged.

DOUBLE SHIFT SYSTEM

The All-India Educational Conference has recommended the introduction o Double Shift System in Schools to economis on buildings. A similar proposal has bee made by Dr. Jivraj N. Mehta, Secretary Ministry of Health and Director Genera of Health Services, Government of India to adopt Double Shift of classes for Labora tory subjects in Medical Colleges. W heartily support these recommendations.

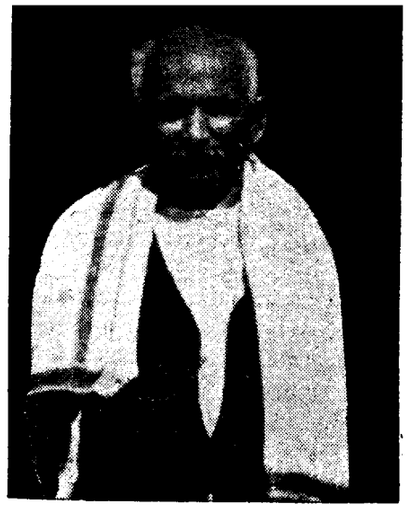
For the expansion of Primary, Secondary and Medical education in the country we need schools and colleges, teaching staff and laboratory facilities many times more than we have them at present. This involves a huge amount of expenditure, which the financial resources of the country may not permit at present. Under the circumstances adoption of double shift system of classes is the only best alternative. With a little additional expenditure, almost double the progress can be made.

The teachers are probably the least paid persons of all services. It is a common experience that many of them take to private tutions in their spare time simply because they cannot meet their both ends meet otherwise, In all fairness, they must be paid decently and their financial worries removed. In return, they can work for more hours. Instead of going on private tutions, they can very well take a double shift of classes. It will better their lot, expand educational facilities and greatly reduce the expenditure involved. The Adarsh Seva Sangha is doing this in Pohri Jagir. We hope, the Provincial and State Governments will take the earliest opportunity to introduce the Double Shift System in their Provinces and States as recommended by the Educational Conference and Dr. Jivraj Mehta.

THE FUTURE OF THE CONGRESS

By : Dr. B. PATTABHI SITARAMAYYA

PROPHECIES in politics may or may not prove true, but planning in politics need not be prohibited. The former are prompted by mere fancy or at best by instinct. The latter springs from the play of intellect. Planning is really an intelligent perception of what is calculated to yield the maximum good to those in whose interests the plans are being drawn up. If the Congress took a forward step from time to time during the past three score and three years, every step so taken was the result of a shrewd perception of how the organ of Indian Nationalism should shape its structure and function in the coming years of each such period, so as to suit the ever-changing times. Times have gone on changing and with them the scope and the aims of the Congress, the object it held aloft before the nation and the means by which it sought to attain its aims. It changed its gears, if we may say so, as a motor car would, from the first gear to develop power capable of pulling the biggest weight, through the second to develop speed along with power, on to the top gear to develop speed. That was how 'Quit India' slogan was suddenly conceived, quickly broadcast and rapidly enforced. With the departure of the British as the ruling power from India, the creed of the Congress which laid down the object of the national body to be the attainment of Swaraj by peaceful and legitimate means, has become outmoded and anachronismal. It does not sit well to-day even in the application forms for Congress primary membership. Much less does it suit the changed conditions of International relationship and national self-competence. The time has therefore come to consider what the Future of the Congress shall be.



When the Congress was founded, its objects were stated by its first President, Late W. C. Bonerjee to be to bring together all the political workers, promote social amity amongst them, collate the outstanding grievances and decide the political plans of the coming year. As years rolled by the merely social and administrative ideals became enlarged so as to embody the subdued political ambitions of the day-namely,-of Colonial Self-Government, Home Rule, Swaraj and Complete Independence. In a sense we can say that we have attained the climax of our national ambitions, though it rests with us to retain our Independence and make it complete. Accordingly, the era of agitation is over and has yielded place to the era of administration. The constructive programme of the Congress cannot still or for ever be made to hang on to the coat tails of a few Khaddar-clad members of the Gandhian Seva Sangh or the All-India Spinners' Association or the Village Industries Society or the Basic Education Committee or the Removal of Untouchability Group, or the Liquor-shops Pickets. Progressive Measures of Economic and Ethical

well-drawn-up programmes of industrial and agricultural reform. Better tenures, easy capital, cooperative facilities, appropriate tools, improved facilities in marketing, liquidation of rural and urban debt alike, rotation of crops, appropriate manures, maternity benefits, old age pensions, criminal settlements, leper asylums, orphanages, boarding houses, waifs' and strays' homes, schools for the blind and the deafmutes, rescue homes for the fallen sisters and widows homes, above all, a free supply of Electricity, collateral occupations and village crafts—these are not things that the Congress can achieve. They must be incorporated in the Election Manifesto of the Congress party and party Leaders—whether inside or outside the Government, must see to their implementation through Government established by Law.

As things stand the Congress has nearly gone out of existence as a dynamic, supervising body.....It is no exaggeration to say that the Parliamentary Board is *non est*. The Zamindary Reforms Schemes of the various Provinces required to be submitted to the Working Committee have not received any benefit by any detached authority bringing an Independent judgement to bear upon it. The Working Committee has more work to get through than it is easily able to handle. Nor has this august body any individuality as against the views of the Federal Ministers.... In a word, while the Congress writ still runs, Congress has alienated the feelings of the masses by the partition of the country and evoked much adverse criticism from the middle classes. It is not for one moment suggested that the Congress has lost credit or caste, but it must be owned that the Congress is living on its capital—a process not always permitted in domestic, social or political economy.

Rebirth Indispensable

The Congress—apart from the supineness which has overtaken it, is now to enter upon a rebirth which will revitalize the organism, enliven it in every way and energise it altogether. To this end it must become an Electional Party wedded to certain definite programme of easy and immediate accomplishment—all directed towards the achievement of a higher—though perhaps more distant destiny. It is no use hugging on-to a body which may not be dead, but which has no visible life. The Congress is really hibernating like the frogs and fish in the pond, and when waters of Elections refill the reservoir of public life, it must be reborn to active and animated life. The Congress has been till now a Propagandist and Educative body. But there is nothing like a general election to carry on education and propaganda to the remotest corners of the Electorate, to the obscurest voter in the land. An Election manifesto is an ever-growing element of public life. It changes with every Election gathering on each occasion volume and velocity, force and fervour, faith and energy. It provokes thought, stirs up the dormant intellect and enlightens the darkest mind, all in the University of Elections. The Congress party will not thus be allowed to rest on its oars; it will not be merely cashing its sacrifices or drawing upon its capital. The party is eternally called upon to find new capital, discover new investments, reap new profits through labours and service directed towards the uplift of the common man, who is destined to be the hub of the wheel of democracy. When the British were extending their paternal and patriarchal care to the people of India, the common man was nowhere. When the Executive Councillors were appointed in 1909-10, he did not count, when Dyarchy was introduced in 1921, it was still the zamindar and the intellectual aristocrats of the British brand that were admitted to the *Sanctum Sanctorum* of the dual system of Government. When Provincial Autonomy came into being in 1937, it was the middle class Congressman that came to his own. The common man, however, has become self-conscious a decade later, i.e. in 1947. The next era is the era of the common man who will head the mass organization into which the Congress will transform itself as a party that controls joint electorates and takes charge of the interest of him who binds the sheaf and him who reaps the corn, of him who wields the sickle and the hammer as well as him who runs the plough or turns the wheel. Thus does the parent organization give birth to the new infant and itself disappear like the scorpion or the silkworm. The parent is dead but the progeny lives and multiplies. Even so we must be able to say in one voice, "The Congress is dead, Long live the Congress"!

—*Amrit Bazar Patrika.*

THE FUTURE OF FOOD AND AGRICULTURE

By: **D. KRISHNA IYENGAR**

ONLY eleven percent of the world's total land area is available for the production of food and fibre crops. This may be a shock to those who think that there is ample productive land left to grow. One has heard the common saying that the world is large and plenty of corn may be grown. But such ideas are wrong and the productive lands on earth are limited. Most of the areas are occupied by hills and dales, rivers and scar, forests and deserts. The best lands are already under cultivation in most countries and the lands that can be brought under irrigation at lowest and cheapest cost have already been put to use. To-day four billion acres of land must feed two billion people of the world at two acres for each human being.



The per capita acreage is not uniform. Some countries have even less than an acre per capita and some more. There are 70 million acres in Argentina, 460 million in U. S. A., 550 million in Russia, 350 million in India, and many other large and small areas in other countries around the world. It cannot be certainly said that all these 4 billion acres are good and reasonably available for the cultivation of all kinds of crops. They also include land already in crops such as fruits, vegetables, and grains, ploughable pasture and fallow lands.

Soil Survey

A study of the world agricultural land situation indicates that nearly 2/3 to 3/4 of world's available cropland are subject to damage either by way of soil erosion or some other causes. Nearly 17½ million acres of land in U. S. A. are being destroyed by gallying. This problem is very acute in India specially in the provinces of U. P., Western Bengal, Southern Districts of Bombay and Chotanagpur. Unless there is a remedial action within these few years, on a comprehensive programme of soil conservation, several nations including India will further invite critical food shortage, which will arise from an insufficiency of productive soil. Man has been using the land for thousands of years to get his every day essentials of life. Even after this long period, mankind is unable to say to-day, exactly how much of land on earth is suitable for production of crops, except in a rough and general way. Nor are we in a position to know, how much of our land has been ruined by soil erosion. As such there is a great need for a world survey of productive land resources and every country should take fundamental steps towards soil conservation of the remaining areas of food producing soil.

The Effects of War

The most dreadful war that we have had, took its toll on the land. Several countries tried to meet wartime demands for food, fibre, fats and oils. Crop rotations were thrown overboard. There was much erosion and reduction of the productive value of many fields. Somehow, many countries tried to keep the land producing and it was kept in such a way that it would yield its utmost. Should we not at the same time try to protect and preserve this land for our own future use and for the generation that will succeed us ? If the land is allowed to suffer, people also suffer. Though the population has been increasing at tremendous speed, yet the productive land remains the same. If it is allowed to lose by erosion, and other causes, how can the increasing population find its food ? In 290 years of time the population of the world multiplied fourfold. In 1650 the world population was 545 million and in 1940 it is 2171 million, yet the increase is not on its peak.

Therefore the problem of nations to-day is to find enough food within the country. When a country neglects its basic soil resources it must perish. It goes down and out. The areas of good food producing land on earth are shrinking and that is why all this trouble of shortage of food to-day. From Australia to the Union of South Africa on the one hand, from Canada to China including U. S. A. on the other, there is a march of onslaught of soil erosion. Unless all these lands are conserved, there may not be enough land to feed and clothe the peoples of the world.

Farming to Feed

For the first time in the history of man, he has been able to banish one of the great enduring fears of mankind, the fear of hunger. In normal times the world could produce sufficient to feed all its children. To-day Science has given us such terrible things as the atom bomb, the bomber, and poison gas. Can we forget the other gifts that it has given ? The gifts that can be used to preserve and enrich life. It has also given us the power and the knowledge to produce sufficient goods for our needs. It is for us to decide whether we should use it well or ill.

Agriculture is one of the oldest and most fundamental of our industries. To-day it has taken a lead among all industries and organisations, because many nations suffered from shortage of food during war and many nations have united in drawing up a working plan to cooperate in solving this problem on international lines.

At Hot Springs, Virginia, U. S. A., the representatives of forty four nations had met in May 1943 for a Conference on food and they pledged themselves, before they parted, to get to work on this problem of feeding the world and decided upon the preliminary lines of approach. As a result of the deliberations of this conference an organization called the Food and Agriculture Organization of United Nations (F. A. O.) was permanently established. It had a conference in Quebec in 1945 and also met subsequently.

Richard Law, who led the British delegation at Hot Springs has summed up the objects of the conference admirably. He said, "There were differences of opinion and they reflected conflicting national interests. But it was quite remarkable how, when we really got down to brass tacks, the differences became less important and how they were got over in the effort to reach a common goal. In fact we became so interested in where we were going that we did not mind it much even if we were jostled on the way a bit, or if some one did occassionally bump into us. I am sure that is the only way you can get on with people, whether they are foreigners or your own country men, by finding some common

interest and going all out for it, by fixing your mind so firmly on the goal that you do not notice the road going uphill or that the stones are sharp under foot.", Mr. James Turner, President of the N. F. U., has addressed the farmers in the following manner : "I cannot tell you how much this visit has changed our outlook. Before we went, Newzealand and Australia were just names on a map to us. Now they are people. Before they represented a spot on the globe that sent us food at prices that some times secured to cut our living from under our feet. Now, they are fellow farmers suffering much the same worries as we know so well in the years between the war."

Not only F. A. O. is regarded as a great humanitarian endeavour but also as an instrument of new peace campaign. From the farmers' point of view, it has shown the best business proposition. One of the first principles enunciated and accepted by F. A. O. is the necessity to create for farmers, all over the world, an economic stability sufficient to supply food. In fact, the philosophy of plenty is being substituted for the old policy of restriction and high prices. Some time back, food grains were held back, in vast surpluses with a view to keep up high prices and they would rather destroy the great surplus quantity than sending it to other parts where it was in great demand. More food that was produced was denied to the hungry and the under-nourished in many parts of the world, only with a view to get more profit. But the F. A. O. offered a way to get straight again and put profit in its right perspective. It also puts the principle of a fair monetary reward to the producer of food in the fore-front of its programme. It is expected that the ideals of F. A. O. would be realised by the willing co-operation of farmers, who would give agricultural realism full scope in putting blood and bone into an international ideal.

Efficiency in Agriculture

The present shortage of food is said to be "the inevitable result of social ignorance and stupidity in arranging economic and particularly agricultural activities and of man's misuse of soils." But the real cause seems to be the ravages of war in agricultural systems and on agricultural populations and capital, and radical effects on the practical possibilities of transport and international transfers of supplies. When all these temporary causes have passed, some of the economic and social factors are bound to remain, which act on the agricultural progress and security of food supply, and without efficiency nothing could be achieved.

The best and most simple evidences of the rise of efficiency of agriculture is the reduction of the proportion of occupied persons required to produce food stuffs for the whole consuming population. This proportion has fallen from 80 per cent to 20 per cent in U. S. A., from 75 to 6 per cent in England and Wales, whereas in India it is increasing. The condition in Germany is most striking and worth describing :

"Saxony with 888 people per square mile belongs to the most densely populated territories in the world. Even the manufacturing State of Belgium with 699 per square mile lags considerably behind Saxony. Of 100 inhabitants in Saxony only 8 are employed in agricultural pursuits. This low numerical share of the rural population is not a reliable indication of the importance of Saxony's agriculture. Although only 8 per cent of the total population is employed in agriculture yet they produce 91 per cent of the required bread grain, 84 per cent of the meat and even 100 per cent of potatoes and milk."

The rising efficiency in agricultural systems and reduction in proportion of population engaged in food production was a sine qua non of general industrial and social progress and of the rise of material

reform, such as the agricultural debt relief or the prohibition of intoxicating drinks have been taken charge of by Congress Governments. To-day mighty reforms like the abolition of the Zamindaries, Land Reform and Labour Laws are being undertaken by the Provincial or the Central Governments of the day. If the Key Industries are to be nationalized, if Banking and Insurance are to be brought under national control, if the units of the federation are to be reconstructed and the map of India is to be recoloured, if the guarantees of food and clothing, shelter, education and medicament of the masses is to be fulfilled, if the army is to be nationalized, and a navy and air force are to be constructed, if communal harmony is to be restored and tribal areas are to be uplifted, it is the Provincial and Central Governments already functioning that must take up the responsibility in all seriousness and be helped on to fulfil it by the co-operation of the public. The ideology has been evolved and broadcast by the Congress. The instruments of execution have been planned and forged by the Congress. The Congress has put its best brains and best characters into the field of Provincial and Central Ministries. India has reconstituted itself into a nation, formed first an interim national Government and then a Dominion Ministry; India has also formed a Constituent Assembly and declared its objective to be the establishment of a sovereign, Independent republic, in which all power springs from the people.

What To Do Now?

What remains for the Congress to achieve? Let us just move on to a workshop for a minute. The scrap iron has been melted in the cupola with an adequate proportion of coke and pig iron, under the action of a blower worked by an oil engine. The molten iron has been poured into moulds built according to patterns, the castings have been taken out. They are crude, and sometimes not quite correct. They have excrescenses and angularities. They must be put on the shaping and planing machines of the workshop, turned on the lathe, punched or bored or drilled on the punching, boring or drilling machine, and fitted into the plant for which they have all been made. Just so has the programme of the Congress reached a stage of fulfilment when the crude castings of the mind are to be placed on the anvil of the Legislatures and subjected to the action of the machinery therein. You no longer need go back to the raw materials which you had to gather in bits to be put into the Cupola. The mechanism of the further progress of Swaraj, its consolidation and development so as to establish a form of Government of the *people*, by the *people*, for the *people*, is wholly different from that which has made the slaves free and driven the tyrants back to their home. It is not membership of the Congress that counts hereafter but the vote at the polls for the Election of the Legislators. It is not the All-India Congress Committee that tells, but the Legislatures that can make and unmake Laws.

That does not mean that the Congress organization must cease to exist and create a vacuum. Politics abhors vacuum as much as Nature. Into this vacuum will naturally be sucked in that party standing nearest the edge. This can only be the Election party which includes the whole adult population barring minors, idiots, imbeciles and criminals who are moral delinquents. When adult franchise is established, it will be ridiculous to continue the old, timeworn antiquated four-anna membership. Every adult shall *ipso facto* be a member of not the Indian National Congress, but the Congress party. The name may even be otherwise. New denominations and new nomenclatures are as inevitable accompaniments of adult franchise, bound to come into being, based upon the new outlook on Economic and

Socio-political issues that must necessarily project themselves on to the arena of public life. Problems of Labour in relation to capital will claim priority over the rest of the items that may crowd our election manifestoes.

"Haves" And "Have-Nots"

When all is said and done it must be owned that the Indian National Congress has till now been largely an institution of the *haves* as against the *havenots*. The Zamindars, the rich men, the landed aristocracy and the Industrialists have exercised appreciable influence upon the trends of Congress thought—not at the base, but at the apex, not over the primary and secondary bodies but over the high command at the top levels. The selection of Ministers at the centre bears witness to this statement. A purely Congress majority assembly such as the Constituent Assembly is, has on its ministry men picked out from the Tatas, the Capitalists and the aristocrats. The Congress has ceased to function as an unalloyed democratic body wedded to principles of responsible Government on a national basis. It has sought to engage the affections of communities racial and religious. Where else is the need for or the propriety of choice of ministers picked out from amongst the Christians, the Parsis, the Hindu Mahasabha, the Justice Party, and the Sikhs? The new body which will replace the Congress will be a purely democratic body composed largely of workers, not salaried or landed or mercantile plutocrats. Whether those workers work on the field or in the factory, whether they work at the table or on the ground, whether they work with their brains or their brawns, it makes little difference provided they *work*. The Congress, it must be said in fairness, did not fail to recognize the dignity and the sacredness of work—but the formulae evolved by the Congress from time to time did not appeal to the Leaders of thought connected with it. They reluctantly agreed to the programmes which never inspired in most cases, and which lost in many others the enlivening and enthusing influence that they should really have carried with them. Such programmes, ere long, degenerated into mere mantrams or dry formulae on dead men's lips. The Congress has thus failed to rise to the level of thought which genuine love of Labour alone could possibly inspire and sustain. A new era has, therefore, to commence which starts where Congress had stopped and popularizes those principles and policies which the Congress had either rendered lip homage to or treated with neglect if not contempt. In effect then when once office acceptance became sanctified by the Resolutions of the Congress, the passion for power soon overshadowed the spirit of service and suddenly we found ourselves confronted with a new type of mentality that worshipped at the shrine of authority. The first victim before the Gods of this new tabernacle was truth and honesty. Not that Congress Ministries were corrupt, but that Congress men were clamouring for favours, permits, licenses, releases and jobs while a few ministers were not themselves above board. And when the Godavary became poisoned at Nasika Triyambak, or the Ganga at Gangothri, no amount of filtration mechanical or *machinical* could purify the waters at the three-mile bed of Gautami at Rajahmundry or the fifteen-mile bed of the Padma at Comilla.

Socio-Economic Programme

Apart from corruption, the socio-economic programme suited to modern conditions of life and the present-day conceptions of democracy can only be implemented as already indicated by Congress Governments in power. To elaborate the same further, if the standard of life is to be raised in India, the *per capita* income is to be augmented from Rs. 65/- as at present to the least Rs. 300 p.a. as against Australia's Rs. 800, Britain's Rs. 1,000 or U.S.A's Rs. 1,400, if the yield per acre of Indian soil is to be doubled from its bare fifty, if the cow's milk quantum is to be swelled from its miserable pound and a half, if the fragmentation of land is to be checked, if the lean pair of bullocks and the [illegible] plough are to be improved, the remedial measures must emanate from duly constituted governments which must be supported by

civilisation. It is very essential that the agricultural systems of the country should develop powers of feeding the non-agricultural population and provide them with such agricultural and other raw materials as they require for clothing, shelter and fuel. One pre-requisite of each step in relative growth is a further increase in efficiency in agricultural production with increase in output per person engaged, so that a greater non-agricultural population can be maintained.

The common charge against agriculture is that it is an inefficient industry. This is on two grounds, that it is a small scale industry, with an assumption that all those that are conducted on small-scale must be inefficient, and secondly, as compared with other industries it is relatively under-capitalised. It is also said that " the productivity of one man day's work in agriculture is less than that of one man day's work in industry or in non-agricultural occupations."

In the economic world, there are two types of efficiency, one in production and the other in bargaining or determining valuation and prices. The values of output per man-day in any two industries are as much determined by valuation in the process of exchange as in production itself. Difference between agriculture and other industries does not wholly reflect variations in productive efficiency. Within the agricultural industry outputs may be measured per acre by crop yields, crop yield index, value per acre, and in calories. Outputs may also be measured per person, per man-day, per man-hour. In fact, agriculturists must use the criterion of output per unit of human labour (per man, per man-day, per man-hour) because it is upon this that the average standard of remuneration and standard of living depend.

Agricultural improvements take many forms and efficiency should be reached in each one of them. Improvements in means and methods of cultivation, discovery, selection, and breeding of plants, selection and breeding of animals, improvements in means and methods of harvesting and storing, changes in sources of power, control of diseases and insect pests to secure certainty of yield, control of animal diseases, and discovery of mineral and industrial sources of plant requirements-in all these maximum efficiency should be secured. All modern ways have stimulated progress in agriculture by the application of scientific knowledge and of capital and mechanical power.

Cooperation in Farming

There is a tendency in almost every country of the world for a rapid change in the technique of farming and in the demands made upon the agricultural industry. This technique of cooperation has been introduced with a view to increase the efficiency of benefit both to producer and consumer. It was applied by successive stages to the provision of working capital, the joint purchase of improved seeds, fertilisers, feeding stuffs and machinery, the marketing and processing of agricultural produce and the provision of services such as irrigation, electric power, livestock breeding and rural transport.

The foundation of all kinds of agricultural cooperation is flourishing in almost all places with its loyal membership, energetic committees and competent managers. Such societies are being assisted by the existence of national organisations on the one hand for trade, and on the other for advice, protection, legal and other assistance. The sales and membership of agricultural cooperative societies in England have increased considerably. The agricultural co-operative movement in Wales is run on lines very similar to that of England. This movement is very strangely conscious of its mission to create an integrated farm economy in Australia. Canada has a well developed

cooperative organisation for the handling of eggs, livestock and fruit; a growing cooperative business in agricultural requisites especially petrolium products, the life blood of mechanised farming and a system of cooperative farm insurance for a number of purposes have been developed. South African cooperation has been strongest in the handling of fruit, wines and tobacco. India is also expanding her agricultural cooperative movement. Agricultural cooperation is a provision of an economic mechanism for technical and scientific progress, as well as the unique combination of voluntary association with the controlled and orderly process of business which the modern world expects. It has an increasing place in the future organisation of agriculture.

Farm Machinery

Marked improvements are expected by the use of machines even in small farming. There exists to-day farm machinery adopted to the needs of many of the small farms. Typical of these machines are the new automatic pick-up hay bales, the self propelled combine and the cotton picker. One cotton picker machine will harvest in a day about as much cotton as could be picked by from 40 to 50 average hand pickers. Remarkable improvements could be achieved by other machines, which are being developed and are in progress.

A day will certainly come when all the work in the farm will be done by farmers using standard farm equipment. Mold-board disk, and harrow-plough have proved entirely satisfactory for such work. The war emphasised and dramatised the importance of farm equipment not only to city people but to many farm families. Without the mechanisation that had taken place in American agriculture, the farmers there could not have produced the crops necessary to sustain the war effort. A great majority of American farms, in future, will be one family farm, owned and operated by the members of the family with little or no assistance from hired labour. To these families, the continuing development of farm equipment means more profitable farm operation and an easier and shorter working day.

Can we not introduce such mechanical equipment into our farms in India? The Indian Sugar Committee observed with regard to motor tractors that their use would be more economical than steam tackle and that a tractor would displace eight or ten pairs of bullocks. But little progress in this direction has been made even on large-sized farms, owing to insufficiency of investigations into the economics of cultivation by their means. The chief result of technological changes in farm equipment will be to make the position of those millions of one family farms more secure, to improve their ability to compete with larger farms and to make most American farms more efficient businesses and better places to live. Here is a great example to India, to investigate and to introduce such tremendous improvements in farm equipment. America has introduced, Ransane's Ploughs, self propelled combines, Fyna Mills, Diesel tractors, harvestor, cultivator, corn-drier, winnograder and other numerous farm mechanical equipments. The Pegson-Marlow pump is a step towards great improvement. It works for hours unattended, filling tanks, emptying sumps, or handling liquid manure. It is the cheapest and most efficient way to handle water. Is it not high time that India should introduce such modern technique of mechanised equipment into her agricultural system?

Agricultural Education

England was the oldest country to introduce agricultural education first. A professorship of Rural Economy was first founded in the University of Oxford in

1796, but the regular course of instruction here began only in the last years of the 19th century. The Royal Agricultural College at Cirecester and the Downton did much valuable work, but they were private institutions. A new chapter in the agricultural education of England began only in 1888. It is only since then that the Government began to spend State's fund and a Board of Agriculture was created and entrusted with this kind of work. A department of Agriculture was inaugurated, and following this a number of other institutions came into being for purposes of providing instructions in several branches of agriculture. A Development commission was set up by Government with a view to expand a comprehensive system of agricultural education. Under this system provision was made for continuing the teaching work, for the direct development of research by creating a number of research institutions, for setting up an entirely new scheme to spread intensive propaganda for farmers, and for aiding local authorities to establish farm institutions and to maintain a staff for the purposes of organising instruction in agricultural subjects. The whole object of agricultural education was the development of agriculture by the adoption of improved methods of production based upon scientific principles.

The courses at the agricultural colleges were designed primarily for those who intended to engage in the practical pursuit of farming or land management. The farm institutes were a new type of instructional centres intended for farmers' sons and others, who were engaged in land. It is not possible to describe what all has been done in the field of agricultural education. From the comprehensive system of agricultural education, with its wide provision for research and for teaching great developments, far reaching improvements are expected.

Inspite of the establishment of Imperial Council of Agricultural Research, and organisation of Agricultural Departments in every province and States, and other research institutions in Mycology, entomology, animal husbandry and dairying, agricultural education has not spread far and wide in India. Sir John Russel reviewing the work of the Council suggested that it should hand over to the Universities investigations of a scientific nature and make a grant to those educational institutions for this purpose, and the result of such research should be embodied in a series of monographs. The Council should stimulate extension work and exploitation of useful discoveries and effective education and propaganda.

The Village

The Agricultural Economics Research Institute of Oxford once said that a village of few hundred people cannot survive as a healthy organism and living conditions in any beautiful village compare most unfavourably with those of any municipal housing estate. Against this, the National Council of Social Service declares that there is wide-spread evidence of a real revival in communal village life and a rapidly growing interest in the best ways of making improvement in the social and public services in rural areas. Thus opinion regarding the prospect of revival of village life is divided.

The development of the internal combustion engine and the rapid extension of cheap motor transport have revolutionised rural life. The village was no longer isolated. Upto the outbreak of the first Great War in 1914, the villages were still self-contained community free from the influence of urban parts. The village had its own squire, parson and school master. Its miller, saddler, baker, builder, smith, shopkeeper, and craftsman-all earned their livelihood from the immediate community which had to

provide its own social life and devise its own amusements.

To-day no village is self-contained as formerly. The agricultural depression between the two wars produced a further drift from the village and the land. Many country people moved to towns and there was considerable migration. But the result of the last world war changed the whole situation. Restriction on travelling, the black out and other new factors, forced the villagers back to their own resources and they again became to a large extent a self-community dependent on its own initiative to provide the social life that was needed.

A healthy and stable agriculture is essential for the welfare of the majority of villages; for, farming and horticulture are still the basic industry of rural England. The introduction of light industries into suitable rural areas would not only be of great benefit to the particular locality but indirectly to agriculture because in course of time they would attract a coming generation of former town folk to the land.

Down the centuries in the pre-enclosure village, if there was anything that the people wanted, they had to unite and get it. "When all is said and done, the conditions in villages are exactly the same to-day. For no communal organisation can continuously thrive, whether it be the modest women's institute, or a group of nations like the U.N.O. unless a sufficient number of its members are ready to put a little bit more into it than they expect to get out of it." In fact this was the essence of the old village system. We find the same conditions in most of the civilised countries.

In India the village organisation as a self-sufficient unit was the first to disappear as a result of the new economic factors ushered in by the British. The introduction of roads and railways, the competitive method of fixing wages and payments, the increased mobility of labour, introduction of cash payments—all these affected the position of the villages and they ceased to be isolated. The social structure of the village was further affected by the activities of the State, by taking away much of the work of these local bodies and special departments for education, revenue, excise, forest, and law and order were created. The age-old spirit of corporate life, the feeling of fraternity, and a policy of give and take within the village, were all destroyed.

If a free India has to plan a new economic order, she must build it on the foundation of the revitalised village as a coherent economic unit, with an equitable distribution for honest labour, irrespective of descent or dignity. There should be hunger and thirst for truth. The heart of India still beats strong in the villages. It should not be neglected and it must be the centre of all developments, social, economical and cultural. The best of it should be preserved, whilst its adjuncts and excrescences which have impeded its progress to a happy and healthy national life should be eradicated.

India is rural, rural in its make up, and rural to the core. Her culture is the culture of the open field and vigorous village side. There is no subject of greater economic importance to Indians than agriculture dovetailed with animal husbandry and dairying. If independent India aspires to be a progressive country, she must be agriculturally progressive first, and should devote her attention to agrarian problems. The 'Economist' a well known London Journal, in one of its articles has summed up India's position, thus: "The real cure is an economic revolution in the country and town as wide ranging and drastic as the modernisation of Russian agriculture by cooperative means, and with state capital. There is no prompt cure for India's ill. The only sure solution of Indian poverty is increased productivity, more output per person to consume or to exchange for consumers goods."

COOPERATION IN THE U. S. A. AND ELSEWHERE.

By: **RALPH RICHARD KEITHAHN**

THE Cooperative movement has grown by leaps and bounds in recent years in America. Frontier America did not lend itself to organised cooperation. There was much neighborliness on the frontier. Even as a boy on my father's farm in the southern part of Minnesota I found there was much cooperation among the pioneers who were now settling down with their families to a regular type of life. New barn structures were raised together. That is, the frames were built on the ground and when the day came when the carpenters were ready to put up the frame structure and thus proceed with the completion of the barn all the neighbors gathered and the "barn was raised". The womenfolk gathered in the home to do the cooking and there was a great common meal. Again, at the time of threshing the grain farmers always exchanged help and that was a joyful time especially for the youth. Never did I work harder than when I hauled bundles of grain to the thresher but never did I have happier times than during those moments when I awaited my turn at the thresher. During my high school days, my father and several of the nearby farmers bought an old thresher and thereafter did their own threshing with their own machinery. This is but an example of the large amount of informal cooperation to be found in the America of the past. And its counterpart is to be found in every rural community throughout the world.

The Cooperative Movement Starts

When I was a boy a Consumer Cooperative Store was started in our County-seat. It did well the few years it carried on business but it soon sold out again to private ownership. Later, when more intelligently interested in the Cooperative Movement I asked the former manager of the store why it had failed. He said that had there been more people to take a vital interest in the store, as did my father (that may have been a bit of flattery!) he would have urged the people to continue. But there was not enough spirit of cooperation. Evidently he felt inadequate to the task of creating that spirit. In 1932-4 I was in a bankrupt rural area of America. I remember one day meeting a group of community leaders and suggesting that the cooperative movement might help us out of our troubles. I received very little encouragement. Those present, including some who had come from England to make their home in America, were loud in their judgements that cooperation would not succeed. I was rather surprised at the time by this negative reaction on the part of those who were community leaders. There was a weak cooperative movement in America before the thirties and it attracted the attention of very few people.

Cooperation Grows Strong

Depression days gave cooperation a boost in America. But as important was the fact that farmers had organised themselves after the First World War. They were meeting monthly and talking over their problems. Many farmers' sons were going to the Agricultural Colleges. They were learning to do things together. They were understanding the need and importance of cooperation. Thus when the Depression came they were in a position to try cooperation seriously. It should also be remembered that the Government had placed "Country Agents" -extension men in the various counties-when the farmers would cooperate. These trained rural leaders were also promoting cooperatives and were present to give every assistance in the organisation of such when the time was ready.

Today the National Tax Equality Association, a tool of the large Manufacturers of the U. S. A., is carrying on an unjust campaign against the Cooperatives. The Cooperatives have grown strong enough to demand their attention. They fear that their own monopoly is being threatened-and it is!

Cooperative Facts

In 10 years the cooperative membership in the U.S.A. in Farm Bureau Insurance has grown from 250,000 to over one million! Assets have grown in that period from 8 to 40 million. From 6 types of insurance now 50 types are furnished. It has spread from 8 to 12 states, (this pertains to Farm bureau insurance only). 1,000 agents have increased to 2,300 agents. One oil cooperative in 1925 started out with a total capital of $12,500. Today it is doing more than $4,000,000 of business annually. Wholesale cooperative societies probably did more than $60 billion worth of business in 1947. In the state of Ohio, farmers own nearly 150 grain elevators cooperatively, two livestock marketing societies and several factories. There are over 440 farmers' cooperatives in this state alone. It is facts such as these that are tempering the economic picture of America—that disturb the Capitalist as he sees his monopolies broken at many points.

Cooperation in Other Countries

Cooperation is stronger in other countries than in the U.S.A. In England and Scotland there are 8 million members. British coops. own one of the largest banks and one of the largest insurance companies in the nation. They are raising one million dollars to build a new building for their Cooperative College. In Sweden the Coops. have been an effective force against monopoly price-fixing and against black marketing during the war. One of the largest steel factories is owned cooperatively. In Finland almost one-third of the business of the country is done by cooperatives. During the war China organised 2,000 industrial cooperatives. In all, China reports 177,000 cooperatives with a membership of 10 million. There are also international cooperatives which are bound to take on more importance with greater cooperation on the part of the nations. It is estimated that these International Cooperatives do more than $20 billion worth of business annually.

Why This Success?

I would like to summarize the reasons given by one of the cooperative leaders (Murray D. Lincoln) of America for the success of this important movement:

1. Consumer action can be translated into definite demands. Profit economy makes goods to secure profits. But Consumers' Cooperatives produce to meet a definite demand. Labor is applied to a definite need.
2. Cooperatives produce only because there is a need. There is not the waste of the profit motive economy.
3. All are consumers and when a group unite to care for their own needs there is never a question of a market. They care for their own needs.
4. Cooperation is a good method to distribute purchasing power. Any gains are distributed to those who do the most consuming which gives such added ability to consume.
5. The consumer is free to buy in any market when he buys together. As an individual he is forced to buy where he can get and what he can get. This freedom of action is most important in a democracy.

One might also say negatively that when the capitalistic economy failed to make an equitable distribution of material goods, when it increased unemployment, when it placed unheard of power into the hands of a few, when it became the cause of Empires and wars that naturally made thousands of people feel that they must try a new economy. The general situation in the world is ripe and has been ripe for a new economy.

The time has come when India must take more seriously this international movement. Of that I shall write in my next article.

DEMOGRAPHIC AND AGRICULTURAL STATISTICS OF SIND

By : **Professor K. N. VASWANI**

Planning the popular area of to-day presupposes surveying and collection of statistical data as its foundations. If planning is to progress, a parallel progress in the public understanding and appreciation of statistics must be provided for and prepared for. Planning is on the programme in Sind as elsewhere, planning of agricultural development and planning for the people's welfare and prosperity. An attempt is made here to present to the general public an analysis of the basic population and agricultural statistics to familiarise them with statistics and to give them in a handy form the basis of planning—our human resources, our labour power and our agricultural resources which are our principal natural resources in Sind.

Our Population Statistics

The population of Sind was nearly 45½ lakhs in 1941. During the decade 1931–1941, it increased by 16% and during 40 years from 1901–1941 by 41% and in 50 years from 1891–1941, by 60%. The natural increase of the population in Sind is about 10% in 10 years. Immigration accounts for the rest of the increase. The rate of infant mortality in Sind, is 120 per mille, while that for India in 1941 was 160 per mille.

Population According to Sex

There is a deficiency of females in Sind. For every 5 males there are only 4 females. This is true of both urban and rural areas and true also for both Hindu and the Muslim population. Among all the provinces in India, Sind has the least number of females—only 818 per 1000 males. This may account for the large number of crimes over women in Sind, specially rural Sind; and the cause of lot of dislocation of labour in agriculture.

Population—Rural and Urban

In Sind the urban rural ratio is 1 to 4, over 80 percent of the population is rural. In 1931-41, the urban population increased by 27.5%, while in 1921-31, it had increased by 29%. The trend towards urbanisation is thus losing ground. 3/4ths of the total population live in places with population under 2000 and 60% in places of population under 500. 75% of the urban population lives in places with population over 2000.

Population According to Religion

The proportion of the Moslem population to total has declined from 76 percent in 1910 to 71 percent in 1941, and that of the Hindus has risen from 23 to 27 percent in the same period. In Tharparkar district, the population of the Hindus and Moslems is almost equal In Upper Sind Frontier, Moslems are 90 percent and Hindus only 10 percent. The Parsees in Sind are 3838, the males and females being almost equal in numbers. 3721 of them are in Karachi. Total population of the scheduled castes in Sind is 191000 in 1941 but in 1931 they were almost half the number i. e. only 99551. The Sikhs in Sind are 31011 in 1941, though in 1931, they were only 18505. The Jains total 3687. The Thakurs of Tharparkar classed separately from Hindus and classified apart from even scheduled castes under "tribes" in 1941, as being of primitive aboriginal caste in Sind, are 36819 in 1941, while they were only 6317 in 1931.

The Urban Rural Trend According to Religion

In 1931, 63% of the Hindu population was rural and 37% urban. In 1941, 58.4% was rural and 41.6% urban. In 1931–41, the Hindu urban population increased by 40

percent. Most members of the scheduled castes in Sind live in rural areas; apart from these almost half of "the caste Hindus" live in towns–the urban rural figures for them being 48.52 percent and 51.48%, respectively.

In 1931, the rural population of Moslems was 89.8 percent while the urban population was 10.2 percent. In 1941, the rural Moslem population was 90.2 percent and the urban Moslem population was 9.8 percent.

Population and Literacy

The percentage of literacy in Sind for the males was 15.6 in 1941 and for the females it was only 4.4. In 1931, the figures were 9.2 percent for the males and 1.7 percent for the females. Literacy among the Hindus and in the towns is much higher, but among the scheduled castes (The Thakurs in Tharparkar now called the tribes) and in rural areas it is low. Among the Moslems in 1941, the percentage for males was 7.8 and for the females 1.1, while in 1931, the figures were 3.8 percent for males and only .4 percent for females.

Population According to Occupation

A random sample survey of the population of Sind reveals that of the employed population only about 10 percent of the population is employed in Trade and Transport, transport accounting for less than 2% of the population; Industry or industrial occupations including barbers and washermen, account for about 7% of the population; public administration and liberal arts provide for about 8 percent of the people and about 10 percent of the population is non-descript, about 2% being vagrants, beggars etc. and about 8 percent belonging to unspecified occupations; the remaining 65 per cent and in truth many of the non-descript, all earn their livelihood from agriculture, over 60 percent directly deriving their sustenance and subsistence from agriculture, mainly from land as Haris, and agricultural labourers.

Costs of Collection of Population Statistics

Some interesting figures regarding the costs of collection of population statistics in India and other countries may be given here. With a population of 390 millions–a fifth of the world's population, the costs of the population census amount to under 50 lakh rupees. In contrast the American census for a one-third of the numbers of population of India, costs 12 crores, that is 24 times the costs of the Indian census. The English cost of census is Rs. 150 per thousand, the Indian cost is under Rs. 15. This is made possible by the people of the country coming forward and taking their unpaid share of work. In America they pay their men 4 cents a head. In 1931 there were nearly 3 million enumerators for the Indian population census. In 1941, the number was atleast one and a half million enumerators. In a sense the Indian population census is India effort. Really half the village may take part in the work; for, things like determining age will often be settled after consulting the older people.

Our Agricultural Statistics

In Sind, of over 30 million acres of land, nearly 11 million acres are cultivated area; only 7 lakh acres are under forests and nearly 13½ millions are altogether uncultivable, leaving about 5 million available for cultivation. Of the cultivated area, about 5 million acres are current fallows, the remaining being cropped area. The average of cropped area in Sind for the 10 Pre-Barrage years 1921–31, was 46 lakh acres; while that for the Post-Barrage 10 years is 56 lakh acres, a difference of one million acres. The latest figure for cropped area is 63½ lakh acres for the year 1944–45, though the same for the earlier year 1943–44, was 64 lakh acres.

Sind is the best irrigated province in India. In 1939–40, the percentage of irrigated to total sown area in India, was 23.9 and varied from 3.9 in C.P. and Berar to 58.3 in the Punjab. In Sind it was no less than 88.1.

Food and Non-food Crops

As for the relation of food to non-food crops, in the year 1944–45, which is the last

for which figures are available of the cropped area 82% was under food-crops and 18% under non-food crops; though for the earlier year 83% was under food crops and 17% under non-food crops. The area under food crops decreased by 49000 acres in the course of the year, the area under rice and wheat decreasing by nearly 2 lakh acres.

In 1941-42, while area under non-food crops, had risen above the average of the Pre-Barrage 10 years by 78%, that under food crops had risen hardly by 15%. The increase under non-food crops was mainly under cotton, the average of Pre-Barrage 10 years being a little above 3 lakh acres, while that of Post-Barrage 10 years being a little below 8 lakh acres. The area under cotton in the year 1944-45 was 8¾ lakh acres.

Cereals and Pulses

In 1944-45, in Sind the area under cereals was 41 lakh acres, yielding 12 lakh tons of cereals. In the earlier year, with only about 1 lakh acres more under cereals, the production was 15 lakh tons. In 1944-45, 27 lakh acres almost equally divided were under rice and wheat, yielding a little over 9 lakh tons together between themselves, wheat only being 3½ lakh tons. 7¾ lakh acres under pulses yielded 1¼ lakh tons in 1944-45, though in the earlier year 7 lakh acres had yielded 1¾ lakh tons.

The total area under cereals and pulses in 1944-45 was 48¾ lakh acres, yielding 13½ lakh tons, while 49 lakh acres in the earlier year, yielded 16¼ lakh tons.

Methods of Collection of Agricultural Statistics

Something may be said here regarding the methods of collection of Agricultural Statistics of area and yield of crops in India. In Sind and other temporarily unsettled provinces, the average figures for area are compiled by Revenue subordinate officials by the method of a census survey-a plot to plot enumeration and regarded to be fairly accurate so that the Woodhead Finance Enquiry Commission, reporting on the Bengal famine, has recommended the system prevalent in Sind and other temporarily settled provinces for adoption in other provinces all over India. It must however be pointed out that for accuracy and reliability of data those who engage in this work of inspecting and reporting, must be adequate in numbers and efficient and honest in character and the primary reporting unit should not be so large as to induce or compel the enumerator to drive the reporter to make the entries without actually visiting each field.

Compilation of Yield Statistics

As for yield per acre, the same is obtained by multiplying the normal or standard yield per acre by the condition factor of the crop in the given year. The normal or standard yield is defined as the average yield on average soil in an year of average character. This normal yield is based upon crop-cutting experiments carried out in plots with crops, the plots being selected by an "Eye" examination. By the condition of the crop is meant the proportion or the relation which the crop at harvest time bears to the standard or normal yield and this condition factor, for anna valuation, as it is called, is based on the visual observations made by the local officers.

The Random Sample Method

The practice of selecting by "eye" of plots by the local officials and the prevalent method of determining the condition factor, have been criticized by expert statisticians, who recommended the random sample method instead. Experimental work in the direction of testing this method is being tested by Prof. Mahalanobis of the Indian Statistical Institute, Calcutta. As the Famine Commission Report said in this connection, "The random sample method is a scientific method of computing yields and the first matter to be decided is whether the adoption of the method is a practical proposition."

The costs and heavy expenses of the Random sample method, for in order to ensure representative statistics, the sample must be fairly large, and the difficulty of obtaining adequate trained personnel for the work, in the absence of which, its results in view of its complementary, might be even more unreliable than those under the present system, are two rebellious factors which may render the random-sample method difficult of operation or adoption, from the practical point of view, in relation to the existing circumstances and conditions prevalent in agrarian India and agrarian Sind, meanwhile the experimenting with this method is being watched with great interest by all concerned.

RURAL FINANCE

By: **MOHAN MERCHANT**

THE problem of rural finance is essentially the most important of all the problems concerning rural development. In the case of India its importance has been increased considerably due to the chronic indebtedness of the rural masses and to their consequent low standard of living. Among others, the chief cause of indebtedness is the defective machinery of rural credit with which we are here concerned.

Principles of Efficiency

At the outset it should, however, be made clear that the problems concerning agricultural finance are absolutely different from those of industrial finance and hence they give rise to special problems. In order therefore, to achieve the requisite degree of efficiency, the following principles should be followed:

Firstly, efficiency in rural finance requires continuity of supply in small instalments rather than lump sum loans at any point of time. As such, rural credit institutions must be organised on instalment lines.

Secondly, there is considerable time gap between the investment of capital and increased productivity. Hence, loans are required for a considerably long period, so that sources of funds must be savings which do not require immediate conversion into cash, for, a farmer cannot fall back upon the Stock-Exchange for raising loans.

The Reserve Bank and Rural Finance

The Reserve Bank has failed to bring the credit agencies providing rural finance within its scope. The Cooperative movement requires consolidation and reorganisation. There are certain demands of the cooperative societies which must be paid the required degree of attention by the Reserve Bank. They demand, firstly, provision for increased cash credit facilities to the Provincial Cooperative Banks; secondly, Cooperative Banks of the states should be brought within the range of influence and scope of the Reserve Bank so as to promote harmony and coordination in their working; thirdly, it should lend against the debentures of Land Mortgage Banks, where they carry a government guarantee. The Time limit against such debentures (90 days at present) should be increased. Moreover, it is argued that the abolition of the Zamindari System and the need for safeguards against the money lenders has increased the importance of the Land Mortgage facilities so that compensation may be paid to the land owners on the security of land. It has been suggested, and rightly, that the agricultural department of the Reserve Bank should be given funds on the Australian model to grant intermediate or improvement loans. In this connection it may be noted that Bank of Australia has a long-term Land Mortgage Department for providing long term credit facilities. The maximum loan granted is £5,000 and the longest term is 41 years. The rate of interest on loans for 20 years is 4% and upto 41 years it is 4⅛%. The Swedish Central Bank grants loans to agriculturists out of a fund of 105 million Swedish Crowns placed by the government at its disposal. Similarly the National Bank of Costa Rica has a Mortgage Dept. Until and unless the Reserve Bank of India grants such facilities in rural finance, we cannot say that it is rendering service in the desired direction. In order therefore, to meet the third demand properly, it is desirable to reorganise and overhaul the working of the Land Mortgage Banks. The Reserve Bank has pointed out in its review that the Mortgage Banks have confined their attention to the redemption of old debts and too little with the improvement of agriculture by providing rural finance.

This is amply borne out by the following figures:—

1941-42	No.	Loans Advanced Rs.	Outstanding Loans Rs.	Overdue Rs.
Madras	119	4,040,114	26,378,791	110,950
Bombay	17	5,58,398	3,881,208	89,992
Cochin	1	274.750	1,829,700	20,665

Rural Finance and the Cooperative Movement

The Gadgil Committee recently reviewed this problem and has made a number of recommendations. Among others, the most important has been the establishment of an Agricultural Credit Corporation to which the State should provide a part of the working capital and expenses of administration and that each province and state should prepare a separate scheme.

Personally, I feel, that a scheme dealing with rural development for its efficient and successful working requires coordination, supervision and management under a centralised authority. The recommendation for a separate scheme by each province and state overlooks this fact and would be haphazard in its working. So far as economic conditions in rural areas are concerned they are more or less the same, then why not have a plan on an all India basis, so that it may be possible later on to effect suitable changes in the light of its working. The Corporation is required to deal with agriculturists through the medium of cooperative organisations where they exist. This would certainly cause duplication and inefficiency. A provincial Cooperative Bank which is already functioning and has acquired experience would be more suitable.

Finally, the Cooperative Planning Committee has remarked that a Credit Corporation which does not give proper representation in the management to those in need of credit is likely to be dominated by lenders. As such this committee recommended, and rightly, that the Prov. Cooperative Banks should be provided with sufficient capital by the state as will enable them to advance loans at 6½% and at 4% for short-term and long-term requirements.

For a suitable rural finance policy, therefore, the following tests should be kept in view. Firstly, all the available sources should be exploited; secondly, to reduce the risks to the lender to the minimum so as to reduce interest rates; thirdly, unproductive loans should be avoided as far as possible; finally, speculation in land should be eliminated by giving adequate finance to the ryot so that land may not pass into the hands of money-lenders.

DEVELOPMENT OF COMPOST WORK IN INDIA

By: **Dr. C. N. ACHARYA**

Among the pioneers who popularised the idea of Compost production in India should be mentioned the names of Dr. Gilbert J. Fowler and of Sir Albert Howard. Dr. Fowler who was Professor of Applied Chemistry in the Indian Institute of Science, Bangalore, and later Principal of the Harcourt Butler Technological Institute, Cawnpore, is well known for his work on the purification of sewage by the Activated Sludge Process, but alongside this work he also developed his idea of preparing compost by the Activated Compost Method. According to this method an active inoculum of fermenting compost is first prepared by mixing cow-dung or other starter with refuse; and to this material which is rich in fungus and bacteria fresh refuse is added, when the latter decomposes rapidly into good manure. Dr. Fowler tried to adapt his above method to the Composting

of Town Refuse and night-soil and started some large scale work in Mysore State. But his process involved so much labour and handling of the material that it has not proved a success under large scale conditions and has been given up. But to the credit of Dr. Fowler must be stated that he started an active Centre of research on Compost and Sewage at the Indian Institute of Science, Bangalore, and his earlier work has been successfully developed by his successors into what is now known as the Bangalore Process for Composting of Town Refuse.

Sir Albert Howard, who was Economic Botanist at Pusa and later Director of the Institute of Plant Industry at Indore, tackled the problem of Compost on the agronomic side with special reference to the composting of farm refuse. Along with Mr. Y.D. Wad he developed the Indore Process of composting farm refuse. This Process involved originally a number of turnings of the refuse material and addition of water, and involved so much labour and attention that he had to simplify the procedure to great extent later on. His Process was subsequently adapted to the composting of Town Refuse at Indore and other Centres.

Sir Albert Howard retired from service and left India in 1931 but he possessed so much dynamic energy and imbibed such a deep faith in the superior properties of compost for producing healthy food, that he started after his retirement in England a new career of world-wide propaganda for compost till his death in October 1947. He spent his time, energy and wonderful enthusiasm in organising a world-wide campaign for popularising the use of compost in preference to chemical manures.

The Imperial Council of Agricultural Research in India came on the scene in 1934 when they agreed to finance the investigations on Compost carried out at the Indian Institute of Science, Bangalore. These investigations were placed in charge of the writer in December 1935. His studies in the early stages were mostly of a scientific and academic nature with a view to finding out under what conditions the maximum quantity of compost of best quality could be prepared from refuse materials. The writer is indebted to Sir J. C. Ghosh then Director of the Indian Institute of Science and Professor V. Subrahmanyam for the facilities accorded to him for carrying out the above work at Bangalore.

The academic investigations at Bangalore led to the development of an improved process for the composting of Town Refuse, which the writer tested out under large scale conditions in Mysore State and also at several municipal centres in Bombay Province e. g. at Nasik, Deolali and Pandharpur, during the period 1940–42. The results of the tests showed that the Bangalore Process was efficient, cheap and suited to municipal conditions in India.

After the Bengal Famine in 1942–43 the Government of India started an active 'Grow More Food' Campaign and asked the Imperial Council of Agricultural Research to introduce the Bangalore Process into as many municipalities as possible. The writer conducted during August–December 1943, an All-India Training Course which was attended by representatives of various provincial and state governments. These Officers were subsequently placed in charge of compost production in their respective areas and have been able to start work at nearly 600 municipal centres in India. About 500,000 tons of compost are at present being prepared from katchra and night-soil, which were previously wasted by being thrown into nallas or burnt.

The scope for further increasing compost production from Town Refuse is immense, since there are nearly 4,000 towns in India, which can produce about 100 lakh tons of manure per year. The Government of India are giving financial grants to Provinces for operating the Compost Scheme and in view of the present food situation it is essential to see

that the scheme is extended to all the 4,000 towns as early as possible.

In the above connection, it may be stated that a great deal of propaganda had to be carried out in order to overcome prejudice of farmers against the use of compost prepared from Town Refuse and night-soil, but as a result of the last three years' work the initial difficulties have been overcome and farmers everywhere are now prepared to use the compost, provided transport facilities are provided to take the manure from the municipal depot to the farmers' village. Town compost is generally sieved before sale to farmers in order to remove glass, tins and other undesirable materials. Sieved compost is as good as farm-yard manure in appearance and smell and is richer in nitrogen and phosphoric acid.

Field trials with town compost carried out in several parts of India during the last three years have given as much as 25% to 50% increase in crop yield. The increase is specially great in the case of vegetables, potatoes and garden crops, but it is also quite appreciable (extra 2 to 3 maunds per acre) in the case of paddy, wheat, jowar, bajra and other cereals.

The main bottle-neck in the matter of more rapid development of compost production has been the lack of cheap transport facilities for distributing the manure produced. A large number of motor trucks are at present being used for distribution work, but the available number is insufficient to cope with the demand. Every additional motor truck engaged on the scheme means an extra 3000 tons of compost applied to land, which means an extra production of 3000 to 5000 maunds of food-stuffs, enough to feed 1000 to 1200 persons all the year round. It is therefore necessary that the Central and Provincial Governments should give all the facilities necessary to municipalities and other composting organisations in the matter of obtaining sufficient number of trucks for compost work.

The question of developing compost production from village refuse has not received as much systematic attention as the composting of town refuse. For one thing, it is a vastly bigger problem affecting about 5½ lakhs of villages in the Indian Union as against 4000 towns to be tackled under the town refuse composting scheme. But the advantages to the country to be secured by a better utilisation of our village refuse are many times greater than in the case of urban refuse since we could produce an extra 200-300 million tons of manure, in the former case, as against an extra 10 million tons from the latter source. But there are special difficulties to be overcome before we can achieve the above objective in organising our villages for manure production and the difficulties are so many and so varied that they require to be dealt with in a separate article.

In America even a hamlet is a city in miniature. It has paved roads, cinemas, radios, a hospital, school, the town hall, and even a local dramatic society. A farmer off his work, wears clothes in the style of Hollywood stars, and he has the musical tastes and that match with the tastes of those who frequent New York's Metropolitan Opera House. The result is this: many people in America prefer to live in villages, while in India few educated persons care to go to villages in spite of patriotic appeals.

—Krishnalal Shridharani.

THE FISHERFOLK AND FISHERY DEVELOPMENT

By: Dr. S. T. MOSES

Fishing and Caste

It is a tragedy that while fishery resources in India are vast and rich, their exploitation is poor; thanks, however, to the general awakening, recently, the industry has during recent years seen some expansion. One cause for the neglect to develop fisheries is that the rigours of the caste system restrict fishing to certain—and these are innumerable in this subcontinent—castes and communities. Fishing in general is a hereditary profession carried on from generation to generation with almost all the members of the family taking part in it to a varying degree. This lesson in 'practical cooperation' extends even to the community as a great deal of the capital invested consists of boats and nets in which the partners have shares. Though the fishing castes here are innumerable, even among the subdivisions of the same caste there can generally be no intermarriage though inter-dining may not be interdicted. Thus the actual fishing population is born and not made and ordinarily people of one caste will not readily take to an occupation scheduled as another's even though its profitable nature is obvious!

Further, curious conventions are still rigidly observed among the fishing communities and these restrict spheres and methods of operations. For example in the Chilka Lake certain castes cannot use nets but only the bamboo screens and traps and in Malabar those who use nets cannot take to lining. The fishermen's calling is naturally despised—this is noticeable even among Christians in spite of its being the Apostles' own calling—more because of the putrescible character of the material and products fishermen deal in and the consequent malodorous condition of their dwellings and hamlets. The social stigma attached to the profession is so pronounced that in Bengal when a few Muslims became fish traders they were looked down upon socially and branded contemptuously as 'Nikharies.'

One curious feature noticed in the present times is the movement for the fusion of castes, which more often results in the evolution of new ones. The 'Parvatha Raja Kula Sangham' of Madras in its efforts to introduce a common designation for the different sections of the community viz. Sambavans, Poosaris, Bhakthars, Maniakkarars and Nattars will only lead to a ramification of the fishermen's caste with no greater cohesion of its ranks, unless the attempt is accompanied by changes in the occupation and life of the community. The title which declares the origin of the community as from a mythological hero Parvatha Raja has already been adopted by individuals particularly by those who do not follow the community's hereditary occupation. But others have preferred the names denoting the occupations, customs and beliefs of the subcastes or subclasses to which they belong. Sembadavans, supposed to have been Siva's boatmen, fish in inland waters and are also ferrymen. They are different from the seafishermen, the Pattanavans. Poosaris and Bhakthars who belong to religious sects wear the sacred thread and officiate at temple services while Maniakkarars and Nattars come from sects which provide headmen and leaders of their villages. All of them show a pride in their history and in their calling and consequently in their caste names despite the disadvantages in a system that divides their society into so many units. One reason why the occupational castes are preserved is obviously that these assure their members of employment within the hereditary occupations uninterrupted by conflicts such as those

villages are usually out of the way, inaccessible and smelly so much so that the general run of officials take no initiative or interest in cooperative work among the fisherfolk. The success of societies here and there is mainly due to the enthusiasm of the Officer-in-charge. Sir V. T. Krishnamachary has suggested the creation of a Council of Cooperation to work in the closest collaboration with the Council of Agricultural Research. Such a Council is equally necessary for fishery development.

In the United Provinces the fish supply scheme started during the war years, made the department of Fisheries a competitor with private agencies in the business as it brought the river fishermen and their operations under state control. Though the Government became the chief producers there was no intention of supplanting the fishmonger or wholesale trader, Government merely running model shops at centres stabilising prices and bringing about reform in hygiene and cleanliness. This 'Allahabad Plan' of control of fish prices and marketing in the interests of both the consumer and the producer provides a short term plan for the economic uplift of the fishermen and the improvement of the fishing industry and prepares the way for a long term plan of cooperation among fishermen. The Utopia for fishermen is the Irish Free State where in 1931 Government established the Irish sea fisheries Association. The fishermen of the Saorstaat coast secured new boats and gear without security and an immediate market at a standard price for their fish while a fresh fish service was thoroughly organised for the whole State. Each fisherman paid 6 shillings for 4 years to give him a standing in the Association.

REJUVENATE INDIGENOUS SYSTEMS OF MEDICINE

By: **T. V. SUBRAHMANYAM**

The All-India Medical Conference is being held in Bombay. When we hear of the Medical Conference we think not in terms of the names or chains of Degrees of the eminent physicians and surgeons who have assembled but the millions of sufferers from various ailments in the remote parts of this vast country who have neither the means to consult doctors nor the facilities to have access into hospitals. Bombay can boast of its K.E.M. Hospital and Haffkine Institute. Madras has its General Hospital and King's Institute. So also every city has its own civil hospital and train of doctors. But all of India is not represented by cities Bombay or a Madras. India is primarily a country of villages and agriculturists. Go to the countryside where 'the ploughman homeward plods his weary way' for miles and miles you cannot see a medical practitioner's board or hear of a doctor's name. Are the people in such places immune to diseases or due to ignorance coupled with fortitude they suffer their pains in silence and ultimately succumb just as a fruit with canker inside grows, fades and falls? Leave alone those cases of natural sufferings. Howmany patients fall a prey into the hands of advertising harpies, fakirs and charlatans who serve more to aggravate the pangs of suffering and squeeze out the poor earnings of the ignorant masses?

The medical authorities who have conferred unanimously agree that India is not a country which can boast of its medical services and the extension of medical relief to the masses is very essential although each specialist has stressed upon the essentiality of

procuring more funds and facilities for further research in his own line.

With a view to achieving the chief objective of augmenting and improving the existing medical facilities in the country, suggestions have been made to the Government to reorientate the policy of medical education by opening more training centres, establishing more pharmaceutical colleges, developing hospitals and nursing centres, allowing large scale import of drugs and medical appliances not available in this country, creating new chairs in Radiology in various medical colleges etc. Appeals have also been made to the philanthropic financial magnates to offer endowments.

The Government will, of course, offer all possible assistance to forward the various resolutions passed and suggestions made. Endowments from rich philanthropists will also be forthcoming. These will certainly go a long way in fructifying the laudable ideals set forth by the medical authorities and in extending medical services in consequence.

With all the activities and enthusiasm of our 'Medicos' and the anticipated assistance from various sources it seems still doubtful whether most of the villages in India will have at least a trained doctor and a small dispensary in the near future.

The reason for entertaining such a doubt is the unsuitability of the allopathic system to the economic conditions of India. Allopathy is a very expensive system studied and practised by the well-to-do class. To become a trained allopathic doctor confident of handling many cases of diseases is no easy joke. Five or six long years in a college after graduating or at least Intermediate without a minimum amount of Rs. 5000/- a student cannot cover his college, laboratory and other fees, cost of necessary text-books and his boarding and lodging expenses in a hostel. College study and text-book knowledge alone are not sufficient to experiment upon humanity. Experience counts more in the medical profession than in any other occupation. For gaining experience it will be necessary for a raw graduate to go as an apprentice in a hospital or as an unpaid assistant under a practising doctor. This will require another two to three years with no earnings. After the completion of the apprentice course to start private practice he should set up his own dispensary with the minimum necessary chemicals and drugs, clinical instruments, other accessories and some reference books. All these will cost another Rs. 3000/- to Rs. 5000/- with all these efforts and expenses he is only an ordinary M. B. & B. S. a Bachelor and not a Doctor.

From the foregoing it will be evident that the allopathic medical system is pretty costly and beyond the reach of a student of ordinary means however much he might wish to take up the course.

Regarding treatment one point that should not be lost sight of is that as medicine becomes more and more specialized along its various branches an ordinary M.B.B.S. gets less and less confident of treating even ordinary diseases by the usual drugs. Even for slightly out of the way cases the patients are directed to specialists or are advised to take X-ray photographs and the expenses for treatment under specialists are too well-known to need any special mention.

The medical profession is undoubtedly the noblest profession on earth because its primary aim is to alleviate sufferings and relieve the pains of humanity. Allopathy is not the only system of curing diseases. There are many others. But allopathy has of course advanced more than the others especially in its famous branch of major Surgery. This is chiefly due to its being recognized by the Government as the official system and the encouragement and support it receives thereby.

Allopathy has its own merits and demerits as the other systems have and in spite of

occurring in organisations in which labour is more composite. The community no doubt needs greater unity. But this can best be brought about by the improvement and expansion of its main calling so that employment may be found for larger numbers of people and there can be no fear that any group of producers will be displaced by others.

In developing the fishery industry, an ancient and indigenous one employing exclusive castes with immemorial interest and customs an essential consideration is the human element concerned. The industry cannot develop unless the fisherfolk whose poverty, illiteracy and conservatism hinder fishery development also rise concomitantly in their intelligence, wealth and status.

Illiteracy

The fishing industry is in the hands of illiterate communities, which however as a class cannot be said to be unintelligent and so fishermen need not only the inculcation of the habits of thrift and temperance but the spread of education, both technical and general. Indian fishermen are lacking neither in intelligence nor ancestral fishery knowledge but what they need is that the benefits which science has conferred on fisherfolk elsewhere should not be denied to them. For instance the Kathiawar fishermen 'associate scanty catches of fish with clear water' connecting in a hazy way disappearance of shoals with poorer plankton. Plankton is the collective name given to all microscopic plants and animals found on the surface waters and which form directly or indirectly the food of all fishes. Their floating about in good quantities discolours or clouds the water. Conditions conducive to the formation and arrival of dense swarms of these organisms naturally influence the character and abundance of fisheries. So fishery investigations including planktonic studies if carried out by the State and results with predictions of success or otherwise of particular fisheries made available to the fisherfolk, that would do much to revolutionise the industry.

The Madras Fisheries department where two members of the communities one a Mukkuva and the other a Parawa, rose to high positions, devoted, on the initiative of Sir Frederick Nicholson, a good deal of energy on welfare work to improve the condition of the fisherfolk and aimed at making fishery education serve in making them better fishermen, more intelligent and adaptive and so capable of understanding and applying better and latest scientific methods of fishing and handling of fish and fishery products. A training institute for teachers to work in fishery schools dotted all along the Malabar and South Canara coast was opened at Calicut in 1918 and the pupil teachers were given practical training in fishery technology, fishing, boating, netmaking, carpentry etc. A similar technological institute was opened at Tuticorin in 1942. Bombay has followed suit by opening schools at Ratnagiri and Karwar to impart the special type of fishery instruction; youths of the community are also trained to run and maintain motor launches. Among the latest plans of fishery development in Bombay is the deputation of fisher youths abroad to obtain knowledge of the most uptodate methods of fishing etc.

Conservatism

Old people are traditionally conservative and the fisherpeople are no exception. So for the introduction of improved methods whether of fishing or of preparing fish for the market it is the younger generation we have to look to and let us hope that the guidance given in fishery schools which are different in many ways from the stereotyped kind would be effective and convince them that the newer methods would lead to immediate and larger profits and consequently to a higher standard of living. Economic improvement does not of itself lead to social improvement unless, while the profits accrue, there is also the desire for better things. Of late an awakening is noticed among fisherfolk in many parts of our country and from every nook and corner we hear of meetings

and conferences discussing their future. Such are more frequent in Bombay, Cochin, Travancore and Madras and all under the auspices of many Fishermen's associations working there.

Improvidence

As a class fishermen are unfortunately known to be notoriously heavy drunkards and thrift is not among their virtues. Though profits earned during a good fishing season should carry the fisherman and his family through the nonfishing months of the year as well, by a longstanding habit confirmed in the course of generations fishermen usually do not save. After spending all the earnings loans are taken from middlemen, capitalists, fish contractors, Zamindars (Bengal), Salt licensees (Sind), money lenders etc., who in lieu of principal and interest appropriate the lion's share of the catches. This tale of exploitation by capitalists and middlemen is so common all over the country that almost everywhere the part of the actual fisher communities in the industry is only restricted to catching fish and sales, if at all, in retail markets. The fisherman debtor never gets market rates for his fish and so in Baroda every season the Revenue Officer fixes the prices to be paid by the merchants at a meeting of the fishermen and merchants and publishes the list in the State Gazette.

Capital

One reason adduced as to why the fishery industry remains primitive and illorganised is that higher caste capitalists have always fought shy of associating with low caste fishermen. While there are Muslims, Parsis and Christians in the fishery business it is rare to find high caste Hindus, though there has been already a change. Outside capitalists have however, to face often the hostility of the fisherfolk or vested interests. The failure of the Anglo-Indians who started motor launches for the transport of fish in Bengal in 1929, and the private trawling companies formed as a result of the labours of the steam trawler 'Violet' in 1902 and 'Lilla' in 1923 was due to these causes. "The Coastal Fisheries" of Bombay which owns the trawler "Diamond Jubilee" has taken note of this factor. Its director has declared that the company's outlook was neither monopolistic nor capitalistic and says "they are determined that in keeping with their aims of helping the fisherman to improve his lot by offering him greater facilities for selfimprovement they hoped to provide for outlets of better employment and training for him and his children as also to give him the fullest benefits of his labour with adequate provision for his future." The encouragement of private capitalist endeavour has its dangers to the fishing communities which may consequently be reduced to a state of serfdom. It is however seen that some of the capitalists under whose tyranny the actual fishermen suffer are the fisher people who, now, do not follow their ancestral occupation. Dr. Sorley considers the point that well-to-do members of the fisher community lend money to the fishermen as of interest and says this probably to some extent mitigates the evil of indebtedness as the moneylender, himself a fisherman, is interested in the proper working of the boat.

"Cooperation"

A study of the conditions makes one thing clear and that is "the peasant of the waters", the fisherman, as a class needs more though he appreciates it less the benefits of Cooperation. Cooperation is the long term plan of amelioration of fishermen but work is certainly uphill under the existing conditions of poverty, ignorance and indebtedness of the fisherfolk. Madras started work early in this direction forming thrift societies, industrial societies etc. among fishermen and other provinces and states followed suit. The Rahimtulla Committee on Fisheries which reported its findings in 1945 stated that there are about 200 fishermen's societies in India and mentioned that only 9 of these carried on cooperative work on improved lines. Fishing

the vast sums of money spent yearly for the advancement of this system, the experimental or developmental stage is not yet crossed over. In spite of the unceasing researches of millions of allopathic doctors throughout the globe adequately assisted by the other scientists 'Man' is still unknown and the rationale of the curative action of all drugs not yet explained. After straining through the tedious courses of anatomy and physiology, essentials of physics and chemistry, pathology, parasitology and bacteriology, histology and cytology etc. the secret operational powers of the tissues and cells have not yet been found out. Human mechanism is something more than a few bucketfuls of water and a bag of salts. The very fact that many drugs are still administered by the allopaths empirically (i. e. without knowing the explanation as to how these drugs act) and the sudden collapses in some cases which after percussion, ausculation and palpation were pronounced as 'hopeful' – clearly show the vast progress allopathy has still to make. On the other hand if we were to look back we could see that no other system of medicine had such a 'dark and brutal' past as allopathy with its old methods of venesection, cupping, cauterization and notorious 'polypharmacy'. Even today this science is progressing so quickly that books and drugs become out of date almost immediately they are published or become popular.

The above account is given at some length not with a view of under-rating the many things good in this system but to show its evolving nature–still experimenting, still progressing—and the enormous expenditure both in mastering and practising it.

Looking to the economic conditions of India it seems exceedingly doubtful whether the allopathic system of treatment can be made popular and within the access of the masses throughout the length and breadth of this vast country. It would require crores and crores of rupees if every village is to be furnished with a well equipped hospital containing all the modern parapharnalia of Radiological, Electrotherapeutic and X-Ray installations.

If popularisation of allopathy is next to impossibility should we keep quiet and leave the country folk to be experimented upon by charlatans and quacks? Are there not other cheaper systems of curing diseases like Ayurvedom, Unani, Siddha, Homeopathy etc. which are by no means inferior to or less effective than the allopathic system? In the recently held 35th Session of the Indian Science Congress, Col. Sir Ram Nath Chopra, in the course of his Presidential Address has correctly remarked that "If the state of medical practice in India is examined without prejudice one is forced to the conclusion that with the exception perhaps of a small number of institutions such as large hospitals and colleges and of a comparatively small number of practitioners the practice of Western medicine (allopathy) is not even a shade better than that of indigenous medicine". The indigenous systems are considered as unscientific and sometimes even condemned not because they are irrational or ineffective but because they are not officially recognized. Since allopathy has been the official system of cure for a number of years and also an international system it has been taught in the Universities in a systematic way and given adequate financial support for its practice and research. Allopathy is not a science by itself: it is a harmonious yet strange combination of various sciences: chemistry, physics, botany and zoology. These sciences including anatomy, physiology etc. cannot be considered as the monopoly of allopathy alone. Every other system of medicine can also be reorientated and rationalized and taught on a scientific basis in the light of the modern sciences, provided they are also equally encouraged by the Government. If allopathy has cured any diseases where the other systems have failed, the other systems (even under the present suppressed conditions) have cured more number of cases left as hopeless by the allopathic doctors.

"Now that the political wash consequent on the British leaving India is dying down the Government should think in terms of rural development" and rejuvenation of the Indian systems of treatment.

It is encouraging to find that the U. P. Government has already taken the initiative in this direction. The members of the Committee appointed by the U. P. Government to suggest ways and means of reorganizing the indigenous systems of medicines in the province have after their recent visit to Madras and interviews with the local experts in Ayurvedom, Siddha, and Unani systems have made a strong recommendation to the U. P. Government to provide for Sixty lakhs of rupees in the budget for the new year to be spent in the establishment of an indigenous medical college in U. P. and for the development of Indian systems of medicine generally in the province.

If similar steps are taken by the other provinces in rejuvenating the indigenous systems of medicine by introducing them in the college curricula on a scientific basis and give ample research facilities India can with a fraction of amount annually spent on allopathy can in a decade perfect these systems and extend liberal medical services so as to reach every nook and corner of this country.

TEN YEAR PLAN OF POST-WAR RECONSTRUCTION IN BARODA STATE

Broadcast Speech by Shri D. V. Gaekwar, Member for Post-war Reconstruction

The chief aim of the Post-war Reconstruction plans is to ameliorate the conditions of the rural and urban population and to raise the standard of life of the common man and further to make the State self-sufficient in the matter of food-grains.

These plans are estimated to cost about Rs. 16 crores. It is the intention of Baroda Government that neither taxation be levied nor loans be floated to raise funds for the execution of these plans. This is because of the sound financial position of the State.

Out of the total population, nearly 72% of it depend on Agriculture. In view of this, nearly 10 crores of rupees are to be spent on plans affecting the rural population alone.

I will now give you a brief account of this Ten Year Plan. Main items among this plan are:–

(1) **Agriculture**

2000 new wells for Agriculture will be constructed during the next five years and an equal number will be improved by blasting or boring. Tubewells will also be constructed where possible. Further generous rebates will be given on fertilizers and such other items. The agricultural plan will cost nearly Rs. 60 lakhs.

(2) **Irrigation**

Sabarmati Irrigation Project forms the main item under this head. This is likely to irrigate about 1,25,000 bighas of land and result in increased production of food-grains and perennial crops like sugarcane. This project is at present under the scrutiny of the Central Waterways Commission of the Government of India. This is likely to cost nearly 3 crores to the State. Besides irrigation, this will also help in generating electric power to the extent of 6000 k. w.

(3) **Communications**

This includes both roads and railways.

Roads:—On the completion of the programme there will be 1453 miles of

metalled roads, 341 miles of gravel roads and 1240 miles of earth roads. This total mileage of 3034 works out at 1.1 mile per 1000 population.

Railways:-On the completion of this programme, there will be 1114 miles of railways in the State.

Both these programmes will greatly improve the economic conditions of the rural population. The cost towards roads and railways will be Rs. 5 crores and Rs. 2.25 crores respectively.

(4) Water-works and Drainages

Augmenting the existing water-supplies of 8 towns is to be taken up and new water-supply and drainage schemes for 22 towns as well as water-supply schemes for 25 villages are on the list. This will cost about Rs. 138 lakhs by way of contribution.

(5) Education

Expansion is aimed at in all types of education beginning with Pre-primary and ending with Higher Education. Places with a population of 5000 and above will be provided with pre-primary schools. Villages with a population of 400 and above will have primary schools. Thus there will be 640 new primary schools within 10 years. Introduction of agricultural bias in 10 schools and handicrafts in 12 primary schools will be undertaken every year. The chief items under higher education will be the Medical and Engineering Colleges. Total expenditure on educational development will be Rs. 133 lakhs recurring and Rs. 80 lakhs capital.

(6) Medical Aid

To start with 150 additional beds will be provided at Shree Sayaji General Hospital, Baroda, and hospitals with 100 beds each will be opened at Mehsana, Navsari and Amreli. Four Maternity Homes and 2 Fourth Class dispensaries will be opened every year. Grants will also be given to Ayurvedic or Allopathic dispensaries run on cooperative basis. Thus the medical development would absorb Rs. 42 lakhs capital and Rs. 95 lakhs as recurring expenditure.

(7) Electric Supply

Due to Baroda's participation in the Grid Scheme, electric power will be available in abundance. This will be utilized in electrification of more towns and villages of Baroda, Navsari and Mehsana districts. By way of encouragement, power will be freely supplied to industrialists and agriculturists giving subsidies where necessary.

(8) Telephones

A five year plan is prepared for telephonic development whereby 34 towns and 49 villages including all district and taluka headquarters will be linked.

(9) Industries

Schemes for industrial development include :-(1) Okha Port Development; (2) Ship building yard at Okha; (3) Industrial Area at Baroda; (4) Expansion of Cottage Industries. This will cost about Rs. 2 crores and will greatly help the industrial development of the State.

(10) Military Education

The need for military education was never so great as it is today. A committee has been appointed to evolve a practical scheme for introducing military training in schools and colleges. Their report is awaited.

I am confident that the above plans will serve the purpose for which they are meant. One example will suffice to convince you about this. The irrigation schemes alone will bring about 1,80,000 bighas of land under irrigation resulting in an increased production of nearly 45,000 tons of food-grains. This will mean a net gain of nearly 56 lakhs of rupees to the agriculturists.

Proposals of the Economic Programme Committee Appointed by A. I. C. C.

THE Economic Programme Committee appointed by the All-India Congress Committee under the chairmanship of Pandit Jawaharlal Nehru accepted at its meetings on January 22 and 25 the recommendations made by the Sub-Committees on agriculture, small-scale and village industries, large-scale and heavy industries and co-operative distribution, says an A. P. I. message.

These recommendations have been incorporated in a single report which has been submitted to the Congress President, Dr. Rajendra Prasad, and will come up for discussion at the next meeting of the All-India Congress Committee.

It is emphasised that the report is not a blue-print, but "an outline programme, the details of which will have to be filled in by the Permanent Planning Commission which has been recommended."

The aims and objectives of programme are :

A quick and progressive rise in the standard of living of the people by expanding the volume of production and full employment of man power and material resources.

The achievement of minimum national income variable according to the cost of living and productive efficiency fixing a ceiling for incomes which should bear a reasonable proportion to the national minimum.

Equitable distribution of the existing income and wealth and prevention of the growth of disparities in this respect with the progress of industrialisation.

Widest diffusion of opportunities for occupations through an economy based on decentralisation and compatible with the requirement of an adequate standard of living and the country's internal and external security, national and regional selfsufficiency and a proper balance between rural and urban economy.

Self-Sufficiency Basis

The main recommendations relating to agriculture are :

Minimum levels of assured production of food, cotton and building materials in every province and every prescribed area on the basis of a scheme of balanced cultivation, removal of all intermediaries between the tiller and the State and replacement of all middlemen by non-profit making agencies such as cooperatives;

Remunerative prices for basic agricultural products and living wage levels and relief of indebtedness for agricultural workers;

Non-recurring permanent land improvement lime anti-erosion etc. through direct investment by the State;

Farms to demonstrate efficient and modern methods of agriculture and pilot schemes for experimenting with co-operative farming under State auspices;

Organisation of co-operative colonies on Government unoccupied but cultivable lands.

Organisation of cooperative multipurpose enterprises and their unions for credit;

Processing and marketing and supply of manufactured goods from towns to villages;

Land generally to be owned by 'bona fide' cultivators fixing the maximum size of holdings and placing the surplus above the maximum at the disposal of the village cooperatives ;

Consolidation of small holdings and prevention of further fragmentation ;

Substitution of land revenue system by progressive taxation of agricultural income;

Organization of Agricultural Finance Corporations operating through Co-operative Societies and Statutory Village Panchayats with well-defined powers and adequate financial resources and machinery of conciliation between landless and landholding peasants.

Organization of Industry

The main recommendations regarding industry (village, small-scale and heavy)—categories and spheres of industries are:

That industries producing articles of food and clothing and other consumer goods should constitute the decentralised sector of Indian economy and should, as far as possible be developed and run on a co-operative basis. Such industries should for the most part be run on cottage or small scale basis.

Larger units are inevitable in the case of heavy industries, e.g. manufacture of machinery and other producer goods. The choice of size will be determined by the net balance of economic and social advantage, preference being for smaller as against larger units.

How to Avoid Insecurity

To avoid economic insecurity and destructive competition, the respective spheres of large-scale, small-scale and cottage industries should be demarcated. In the conditions prevalent in our country emphasis will be on providing opportunities for employment of our unutilised or partially utilised manpower and minimising the use of costly capital goods. Large-scale industry should also be utilised to improve the economic basis and the operative efficiency of small-scale and cottage industries. Certain lines of manufacture should be reserved for cottage industries. Cottage industries may be protected from the competition of large-scale industries through State control of competing large-scale industries, grant of subsidies or some method of price equalisation, control of investment and licensing of new undertakings.

Regional self-sufficiency should be the aim with regard to all types of industries. The location of industry should be planned as to make a district of average size, having roughly a population of ten lakhs, as nearly self-sufficient as possible in respect of consumer goods supplying the daily needs of the people. Fiscal and other measures may be adopted to foster suitable industries in different regions, specially in depressed areas.

Industrial Cooperatives

The small scale and cottage industries should be promoted on non-profit lines through Industrial Co-operatives under the State auspices through non-official promotional bodies, Government being represented in it but not controlling it. The structure that is built up should be a strong federal structure, consisting of primary societies, their regional unions and the apex federation. The Industrial Co-operatives should do the purchases, sales, arrangement of tools, workshops, guidance, and supervision. The major portion of the produce of these industries should be sold through consumers and multi-purpose agriculturists' societies. To create the right type of leadership in the development of these industries a cadre of organisers, technicians and secretaries etc. with pay and conditions of service similar to that in public bodies, should be trained.

The Government should encourage the development of cottage industries by grant of direct loans and subsidies through co-operative societies in the initial stages, specially in case of losing industries and new industries, by using their products in their departments, organising propaganda and advertisement and arranging the demonstration of and training in the application of better tools and processes and undertaking and encouraging research for the purpose of developing these industries efficiently and for better utilization of available natural resouces through a permanent board of research.

Transition to Public Ownership

New undertakings in defence, key and public utility industries should be started under public ownership. New undertakings

which are in the nature of monopolies or in view of their scale of operations serve the country as a whole or cover more than one province should be run on the basis of public ownership. This is subject to the limit of the State's resources and capacity at the time and the need of nation to enlarge production and speed up development.

In respect of existing undertakings the process of transfer from private to public ownership should commence after a period of five years. In special cases a competent body may after proper examination, decide on an earlier transfer. The first five years should be treated as period of preparation during which arrangements should be made to take over and run these undertakings efficiently. The progress of transition to public ownership should be controlled so as to avoid dislocation of the economic life in the country. State acquisition of these industries should take place when the excessive margins of profits prevailing in the existing abnormal conditions have declined to a reasonable level in consequence of the fall in price or under pressure of appropriate legislation or administrative measures.

Economic Civil Service

To secure efficient development and conduct of public-owned industries, suitable administrative agencies should be set up, e.g.

(1) Creation of an Economic Civil Service which will furnish industry with Executive of different grades.

(2) Training of requisite industrial cadre.

(3) Technical training and general education of the workers.

(4) Organisation of research and information.

(5) Control of investment and of shares or strategic resources, and

(6) Intensive and detailed economic surveys.

Departmental control should be confined to questions of policy. The system of Statutory Corporations should be developed with necessary adaptations to suit Indian conditions

In private industry the existing system of Managing Agency should be abolished as early as possible. Private industry will be subject to regulations and control in the interest of national policy in industrial development.

Limits of Profits

Return on capital will be computed on employed capital i. e. capital plus reserves Distributed profits will be taxed at a higher rate than undistributed profits. A five per cent dividend in terms of employed capital will be the maximum limit for distribution of profits.

After the date of declaration of the maximum limit, the amount of profits to be transferred to the reserve funds should be limited to such sums as, in the opinion of competent authority, may be utilised for productive purposes by an industry or industries. Out of the profits earned in any year, the surplus. after setting apart three percent on employed capital as dividend and another portion to be earmarked by Government for schemes of social welfare and industrial improvement will be shared between the workers and shareholders in proportion to be fixed by Government—the employer's share not exceeding in any year a third of the basic wage or the national minimum whichever is higher.

All resources available for investment should be subject to the control of the State The State should set up Finance Corporation. Banking and insurance should be nationalised.

Capital Labour Relations

Stable and friendly relations between Labour and Capital should be maintained through profit-sharing and increasing association of Labour with management in industry and establishment of Works Committees in each undertaking, Regional Labour Boards with adequate and elected representation of Labour in each industry, settlement of all disputes through conciliation, arbitration and adjudication and guarantee of a minimum wage, proper housing and insurance against old age, sickness and unemployment.

To have a balanced progressive economy in which regulated distribution will form an integral part of a comprehensive economic plan for the country and to control wages and the prices of agricultural and manufactured commodities distribution of consumer's goods should be co-operatively organised.

A Multi-Purpose Co-operative Society with branches for agricultural producers, consumers and small industries should be set up to develop an integrated economy for the village.

Co-operative Consumers' Societies may be organised for a locality or for groups of wage-earners and where possible for salary-earners in establishments of private or State concerns. State may encourage the growth of societies in various ways.

Central Planning Commission

The Economic Programme Committee suggests that a Central Planning Commission should be appointed to advise and assist the Congress Governments in implementing the programme. The nature of present tax structure complexion of the country's foreign trade and the place of foreign capital in the development of the country's economy should also be examined by the Planning Commission so that each of them might contribute to the development of a free and self-sufficient economy on the lines indicated in the programme.

Multi-Purpose Co-operative Societies and Their Utility

The Alamuru Co-operative Rural Bank Ltd. Alamuru

CREDIT societies have been functioning in the Pronvince from 1904. There are several vicissitudes in the progress of the movement due to wars and economic depression during this half a Century. The catering of credit alone is not advantageous to the ryots.

With a view to supply all the wants of the agriculturists, a new co-operative organisation was started on multipurpose basis with limited liability as an experiment in this locality. Along with credit, members' requirements such as consumers goods are distributed and the produce of the members marketed by the society.

The progress in these three directions is shown below in the activities of the Bank during the decade of its existence by the following facts and figures.

Membership

A statement of the progress in regard to membership and share-capital is as follows:-

Year.	No. of members.	Share-capital.
1937-38	93	Rs. 1745
1938-39	239	3148
1939-40	491	6690
1940-41	1272	11960
1941-42	1525	13228
1942-43	1887	13106
1943-44	1895	14957
1944-45	2042	18799
1945-46	2555	25991
1946-47	2952	33892
1947-48 (31-12-47)	3363	42930

Out of 3363 Members :—

Brahmins	274
Kammas	396
Kapus	287
Settibuljis	263
Christians	153
Mohammadans	39
Harijans	1159
Others	352
	3363

Agriculturists	2794
Non-agriculturists	382
Mixed	187
	3363

Out of 2794 Agriculturists:—

Resident land owning cultivators	239
Non-cultivating land owners	261
Tenants	308
Landless labourers	1986
	2794

In the first year, the Bank had on its roll 93 members with a paid up share-capital of Rs. 1745/-. To-day the number of members is 3363 with a share-capital of Rs. 42,930/-. It will be noticed that there was a steady increase in the membership but the greatest increase was in the two years after the war when more members were attracted by the amenities created by the Bank through supply of rice, cloth etc. Out of the total number of members, half are Harijans; and Kammas, Kapus, Brahmins and Settibuljis follow in the order of importance. More than 80% of the members are agriculturists and of these more than 70% are landless labourers, the majority of whom belong to the Harijan community. It will be noticed that the Bank is rendering service to all communities and the economically weak members of the Harijan and other communities who form the bulk of the landless labourers, are very well served by this Institution.

Loans

The number and value of loans sanctioned in each year are furnished below:—

Year.	No of Loans.	Amount.
1937-38	75	16,066
1938-39	316	52,236
1939-40	468	73,495
1940-41	1371	96,393
1941-42	1414	93,281
1942-43	1581	95,411
1943-44	901	1,00,124
1944-45	495	1,55,414
1945-46	882	2,26,011
1946-47	825	2,18,051
1947-48 (31-12-47)	430	1,78,254
		13,04,736

Classification of loans issued during the half year according to purpose

	No.	Amount
Agricultural purpose	95	26,727
To clear petty debts	78	46,522
For family expenses	149	30,983
For trade purpose	46	47,409
For purchase of land	3	3,669
For Purchase & Construction of houses	13	8,359
For Educational purpose	4	1,300
For purchase of vehicles & machinery	5	6,530
For purchase of cattle	7	1,466
For payment of Govt. Kist	10	330
For purchase of cloth	19	4,919
For medical aid	1	40
	430	1,78,254

Number of loans issued during the half year classified as per denomination

		No. of Loans	Amount
Below	50/-	89	Rs. 1536/-
,,	100/-	46	3968/-
,,	250/-	96	17560/-
,,	500/-	119	44439/-
Above	500/-	80	110751/-
		430	1,78,254/-

In the first year, the Bank sanctioned 75 loans for Rs. 16,066/- and during the current year uptill now 430 loans for Rs. 1,78,254/- are sanctioned. The gross disbursement of loans during the whole period will be found to have exceeded Rs. 13 lakhs. As in the case of membership, these loan transactions also were highest during the last 3 years.

90% of the loans are sanctioned for trade purposes, clearing of petty debts, family expenses and agricultural purposes in order of importance. Upto the present day 1525 loans are outstanding for an amount of Rs. 3,96,918 of which 644 loans for Rs. 1,79,143 are on mortgages while 850 loans for Rs. 1,97,783/- are on surety and joint responsibility.

Cash-credit is given on ever-continuity bonds and the member's maximum borrowing limit is fixed and they are allowed to draw the amount as and when they require it. They can operate on the account just as they use the current account. When repayments are made, they can draw the amount without further sanction. Hence many members are using this facility without applying for surety loans.

Resources

The members have invested by way of fixed deposits an amount of Rs. 97,000/- whereas non-members have deposited more than 1,44,000/-. Further, the total current deposits exceed more than Rs.1,31,000/-,.

The Bank owes to the Central Bank Rs. 30,000/-by way of loans. It has already been pointed out that the main investment is by way of loans to members for an amount of Rs. 3,82,000/-. The Bank has been self-supporting ever since its inception. This year the Bank has to apply for a loan in the Central Bank, as there was heavy demand for loans for agricultural and for petty trade purposes. So, on repledge of mortgage bonds, the Bank is obtaining cash-credit and oans from the Central Bank.

The Bank has got two buildings worth Rs. 20,000/- and it has invested by way of shares in other institutions, an amount of Rs. 8,000/-. It has a Reserve fund of Rs. 21,000/-.

The Bank has been doing yeoman service hitherto by supplying rice and cloth. With the introduction of informal rationing, sale of rice was discontinued. And previously it may be pointed out that there was an average sale of rice amounting to 15,000/- annually. The sale of manures has to be suspended for want of supply and also due to the fact that the Agricultural Department has undertaken the distribution of manures in this village.

Details for the cloth sold

Years	Amount
1939-40	914/-
1940-41	575/-
1941-42	1085/-
1942-43	13063/-
1943-44	9307/-
1944-45	4329/-
1945-46	—
1946-47	14230/-
1947-48 (31-12-47)	3838/-

The society has also been encouraging co-operative farming by way of getting lease of lankas and distributing them to the Harijan members.

The Bank collected a donation of Rs. 2.800/- for Rural Uplift work and spent the amount for the following purposes:—

Contribution to the local middle school for giving scholarships to poor students. ... Rs. 500-0-0

Contribution to the Jonnada Co-operative Cattle Breeding Society. ... 500-0-0

For raising the tank bunds and for the maintenance of two parks. ... 1800-0-0

The Bank is maintaining a radio for the use of the public. It is maintaining a reading room and subscribing for Daily and Weekly newspapers.

A number of beehive boxes are kept in the office for sale for encouraging beehiving as a cottage industry.

The Bank opened a free Homoeo Dispensary out of its donations to give medical aid to members and non-members alike to fulfil its objects. Daily 100 patients are attended to. Mr. V. Satyanandarao is working as the honorary physician of the institution.

The Institution is able to maintain its progress all these years and dispel the fears of the investing public, by its successful working.

We are deeply thankful to the public, the officers of the department and the management of the Ramachandrapuram Co-operative Central Bank for their valuable assistance at all stages of the progress of this Bank.

N. Satyanarayana,
President.

Prospectus of the Rural Workers' Training Institute

ADARSH SEVA SANGHA, POHRI, GWALIOR

1948-49

Object

THE object of the "Rural Workers' Training Course" is to give thorough grounding to rural workers, both men and women, in theory and practice of rural development. The training while embracing all-round development of village life, will particularly, initiate the trainees to the methods of Planning on the basis of Economic Democracy. Social Security and Village Administration to meet the five essential requirements of the villagers-Food, Clothing, Housing, Health and Education, including Means of Communication.

Period of Training

The period of training will be of one year from the lst of May, 1948 to the 30th of April, 1949.

Qualifications for Admission

The candidate wishing to join the 'Training Course' should have the follwing qualifications :-

1 He should have faith in the establishment of a new World Order based on the principles of Economic Democracy.

2 He should be prepared to live and practise the three principles of Economic Democracy; viz., Service Motive, Planned Life and Full Employment in his every day life.

3 He should be inspired with patriotic love and zeal for the service of the villages and be imbued with a desire to improve them at personal sacrifice.

4 He should have a good knowledge of Hindi and English to be able to follow lectures in both the languages. His educational equipment or general ability should be that of a graduate standard,

5 He should be a non-smoker.

6 Wearing of Khadi is greatly desirable.

7 He should strictly observe the discipline and the daily life of the Institute.

8 He should be of good physique capable of putting hard manual labour. He should instinctively be a lover of hard life and be able to withstand the privations of life in villages.

Course of Training

(A) Theoretical :-

(a) The following are the subjects for study:-

1 Theory and Principles of Rural Reconstruction.

2 Principles of Planning for the establishment of Economic Democracy and Social Security.

3 Rural Survey.

4 Village Administration and the Working of Panchayats.

5 Organisation and Working of a Village Centre.

6 Scientific and Advanced Agriculture.

7 Live-stock Improvement.

8 Development of Cottage Industries.

9 Training in Cooperative Principles and Methods.

10 Rural Education.

11 Rural Health and Sanitation.

12 Nutrition and Balanced Diet.

13 Social Aspect of Village Reconstruction.

14 Importance of Moral and Religious Background.

15 Rural Housing.

16 House Keeping and Home Decoration.

17 Means of Transport and Communication.

18 Village Defence.

(b) There will be a well-equipped Library on all subjects for reference and study.

(B) Practical :-

Practical training will be imparted both at the Institute and in the villages. Training in the following Cottage Industries will be

given at the Institute:–

1 Hand-spinning and Hand-weaving (Khadi work)
2 Paper-making (Hand process)
3 Match-making (Hand process)
4 Bee-keeping.

Each candidate will be required to undergo complete course of training in at least one of the industries. He will however have the liberty to get a working knowldge of other industries as well, provided he has time for the purpose. In addition to instruction in the technique of each industry the candidate will be given training in management and keeping of accounts thereof.

Practical training in villages is meant to develop contact with the villagers, to understand their psychology, to develop administrative capacity and to test the principles studied at the Institute in their application to rural conditions. While working in villages, the trainees will specially be initiated in the following :—

1. Survey of village conditions.
2. Planning for all-round development of village life on the principles of Economic Democracy.
3. Organisation and Working of a Village Centre on the basis of Cooperation and Self-help.

(C) Study Tour:

After the students have completed their theoretical and practical training at the Institute, those who can afford, will be taken on an all-India study tour for a period of one month in order to equip them with practical knowledge of nation-building activities at different centres in the country. The expenses of this tour will be about Rs. 300/- per candidate.

Hostel Arrangement

The candidates will be provided comfortable lodging in the Hostels of the Institute.

Mess Arrangement

There will be a common mess for the students where two regular meals will be provided along with breakfast in the morning and light refreshment in the afternoon. The food supplied will be vegetarian. To those who like to cook for themselves, there will be separate arrangement.

Monthly Expenses

The monthly expenses of a trainee will come to about Rs. 50/-.

Food and breakfast	Rs. 35/-
Training in Cottage Industries	,, 5/-
Miscellaneous	,, 10/-
	Rs. 50/-

Each trainee will be required to attend to his personal needs and provide himself with necessary requirements. He should bring his own lantern for use at night.

All money for the monthly expenditure of a trainee will have to be deposited in the office by the 10th of each month at the latest. At the time of admission, a trainee will be required to deposit Rs. 10/- as Library security and Rs. 25/- as an amount for special exigencies.

Monthly accounts along with the progress report of the trainees will be supplied to the guardians and the authorities concerned.

Note–Pohri is connected with Gwalior, Jhansi, Ujjain and Guna by Bus services of G.C.I.T.Co. Via, Shivpuri.

For further information write to,

The Principal,
Rural Workers' Training Institute,
Pohri, Gwalior

COTTAGE INDUSTRIES DEMONSTRATIONS

by Adarsh Seva Sangha in Gwalior Fair

The Adarsh Seva Sangha, Pohri (Gwalior) was the recipient of a gold medal with merit certificate for its excellent demonstrations of Cottage Industries in the Exhibition held along with the Gwalior Fair from the 25th of December 1947 to the 10th of January 1948. The demonstrations covered a wide variety of industries–ginning, carding, spinning, niwar-making, printing, paper-making, match-making, bee-keeping, etc. spread over an area of about 175 feet in length.

Object:—The object of organising the cottage industries demonstrations in the Exhibition was five-fold:

(1) To demonstrate how villages could become self-sufficient in their every day requirements without depending on outside;

THE RURAL INDIA

Vol. XI No. 3] MARCH, 1948 [Whole No. 110

"Salvation of India lies in cottages" —*Mahatma Gandhi.*

SECRETARIAT LIBRARY MAR 1948 MADRAS GOVERNMENT

GANDHIJI'S LAST WILL AND TESTAMENT

It is now a matter of common knowledge that the last will and testament of Gandhiji was to disband the existing Congress Organisation and reconstitute it into a new body of constructive workers to serve and uplift seven lakh villages of India. The draft embodying his radical views on disbanding the Congress and forming a new body under the name of 'Lok Sevak Sangha' was prepared by Gandhiji himself and handed over to Acharya Jugal Kishore, General Secretary of the Congress on the forenoon of January 30th, the day of his assassination. The text of the draft reads as follows:–

"Though split into two, India having attained political Independence through means devised by the Indian National Congress, the Congress in its present shape and form, i. e., as a propaganda vehicle and parliamentary machine, has outlived its use. India has still to attain social, moral, and economic independence in terms of its seven hundred thousand villages as distinguished from its cities and towns. The struggle for the ascendency of civil over military power is bound to take place in India's progress towards its democratic goal. It must be kept out of unhealthy competition with political parties and communal bodies. For these and other similar reasons, the A. I. C. C. resolves to disband the existing Congress Organisation and flower into a Lok Sevak Sangh under the following rules with power to alter them as occasion may demand".

The Rules framed by Gandhiji have been purposely omitted from our present consideration. They, obviously, pertain to the organisational part of the new body and lay down a code of conduct and the various functions of its members.

Having for long realized the rot that has set in the present machinery of the Congress and growing demoralisation in its ranks, which have largely undermined the prestige, efficiency and credit of the national organisation, Gandhiji had advised the country to disband the present Organisation. And, in order to ensure, social, moral and economic freedom to the common–man in the villages, he had also advised to create a new body composed of real Servants of the Nation. He had further warned this new organisation to keep away from unhealthy competition with other political parties and communal bodies. For, in his last editorial in Harijan on the future of the Congress he had clearly sounded a note of warning that, "if the Congress engages in the ungainly skirmish for power, it will find one fine morning that it is no more." The Congress Working Committee and the A. I. C. C. which are charged with the responsibility of framing a new Constitution of the Congress have, therefore, the difficult task of incorporating the fundamental objectives and wishes of the Mahatma, who, more than anybody else, had made the Congress what it is to-day.

The last public document of the Father of the Nation is worthy of veneration and implementation both in its letter and spirit. The future of the Congress or of any other body that is to be created to take its place varily depends on implementing the fundamental principles which Gandhiji had enunciated in his draft. The draft in question unequivocally gives expression to Gandhiji's last wishes on the following points:–

1. That the present Congress Organisation should be disbanded.

2. That a New body by the name of 'Lok Sevak Sangha' be started.

3. That this New Body should be composed of the Servants of the Nation working in villages for the development of villages.

4. That the new organisation should keep away from unhealthy competition with other political parties and communal bodies.

The new Constitution of the Congress considered by the All India Congress Committee during its recent session at Delhi has to be judged by the four tests laid down by the Mahatma. With due respect to wisdom and political foresight of our leaders in the Working Committee, we are constrained to say that the present decision of the All India Congress Committee is not in accord with the wishes of the great departed. The Congress has not been disbanded, the new body has not been created, Constructive Programme and work in villages do not hold priority in the programme of work, and rather than keeping away from unhealthy competition with other political parties, the constitution framed reflects clear tendency to completely monopolise political life of the country. We regret to have to admit that this, in short, is negation of the wishes of the Mahatma to whom the Congress and the Country owe their present position of freedom and responsibility.

The present new Constitution seems to be a mere eye-wash or rather an attempt at putting old wines into new bottles. This, we have no doubt, will not succeed in purging Congress of the corroding corruption and demoralisation, which have brought the great National Organisation to the verge of disintegration and death. It will neither make it a fit instrument to effectively discharge the responsibilities of national administration and development, which are the supreme need of the hour.

That the Congress has lost decisiveness and effectiveness of old and needs vital changes is borne out by no less a person than Pandit Jawaharlal Nehru—the Nation's Leader. Speaking on the resolution of the Constitution of the Congress, Panditji said:

"For two years now they had been discussing changes in the Congress Constitution. The Committee concerned had changed its draft twice or thrice, because it was a complicated question and further, there was no decision on the fundamentals. Gandhiji had suggested that adult franchise should be introduced in the Congress but the Committee was unable to accept in toto. The reason why they could not come to a decision was that the organisation as such had appeared to have lost the requisite sense of decisiveness. Some twenty years ago they had not such a big resolution and yet they had functioned effectively."

This, obviously, is a sad state of affairs to which Congress has reached. However, we are glad to note from a statement of Shri Shankarrao Deo, General Secretary of the Congress, published in daily papers, saying that final decision has not been taken by the Congress in the matter of the new Constitution and that it will again be placed before the All India Congress Committee at its next session in April before it is finally passed. This, we are sure, will afford the members an opportunity to weigh well Gandhiji's draft constitution and to think out ways and means to incorporate his main suggestions in the new Constitution. Failure to do that, will, we have no doubt, be a clear betrayal of the last wishes of the Mahatma and would also likewise seal the fate of the Congress. May the National Leaders rise equal to the occasion and fulfil the trust reposed in them by the great departed !

NOTES

Gandhiji on Village Movement

In the passing away of Gandhiji the Village Movement has lost its greatest champion and foremost pioneer worker. He has bequeathed the richest legacy of his great ideal to sustain us in our difficult journey to make the movement a success. Rural Workers, we have no doubt, will find in these precious gems of Bapu, a beacon light, which will illumine their path in the midst of darkest night of weak faith, failure and disappointment:—

"I have believed and repeated times without number that India is to be found not in its few cities but in its 700,000 villages. But we town dwellers have believed that India is to be found in its towns and the villagers were created to minister to our needs. We have hardly ever paused to inquire if those poor folks get sufficient to eat and clothe themselves with and whether they have a roof to shelter themselves from sun and rain.

"I have found that the town dweller has generally exploited the villager, in fact he has lived on the poor villager's subsistence. Many a British official has written about the conditions of the people of India. No one has, to my knowledge, said that the Indian villager has enough to keep body and soul together. On the contrary they have admitted that the bulk of the population live on the verge of starvation and ten per cent are semi-starved, and that millions have to rest content with a pinch of dirty salt and chillies and polished rice or parched grain.

"You may be sure that if any of us were to be asked to live on that diet, we should not expect to survive it longer than a month should be afraid of losing our mental faculties. And yet our villagers go through that state from day to day."

x x x

"We have to teach the villagers how to economise time, health and money. Lionel Curtis described our villages as dung-heaps. We have to turn them into model villages. Our village-folk do not get fresh air though they are surrounded by fresh air; they don't get fresh food though they are surrounded by the freshest foods. I am talking like a missionary in this matter of food, because my mission is to make villages a thing of beauty.

"The revival of village industries is but an extension of khadi effort. Hand-spun cloth, hand made paper, hand-pounded rice, home-made bread and jam are not uncommon in the West. Only there they do not have one hundredth of the importance they have in India. With us their revival means life, their extinction means death to the villages.

"If we should have electricity in every village home I should not mind villages plying their implements and tools, with the help of electricity. But then the village communities or the State would own power-houses just as they have their grazing pastures. But where there is no electricity and no machinery what are idle hands to do?

"Villages have suffered long from neglect by those who have had the benefit of education. They have chosen the city life. The village movement is an attempt to establish healthy contact with the villages by inducing those who are fired with the spirit of service to settle in them and find self-expression in the service of villagers.

x x x

"The village movement is as much an education of the city people as of the villagers. Workers drawn from cities have to develop village mentality and learn the art of living

where there are no great industries or no conspicuously wealthy class, and where the property ownership and control are evenly distributed. These conditions are seen in many North European communities. It would seem that the only approach to political democracy is economic democracy. Where the people know one another as neighbours, where they have equal standing in the economic field, where their commerce is not controlled by a minority but is in the hands of all-there is economic democracy, and there political democracy may be possible.

"There is much talk of reforming the State- "political reform", it is called. But so long as inequalities and injustices exist where people earn their living and spend their wages the State can be expected to promote inequalities and injustices.

"For a thousand years the State has been growing more powerful and more dominant. The time was when people lived their lives wholly in the economic field. Then the rise of stateism began. People were taught that their first duty was to the State. People were once neighbours and felt the responsibilities of neighbourliness. Then came the State and taught that patriotism was enough. A centralized power was created toward which people were taught to look for help, and to which they were taught allegiance. "The first duty of the the citizen is to the State" is written in constitutions. Once people did things for themselves, now the State does things for them.

"As we have seen, Stateism is coming very fast. And the public mind is becoming adjusted to it. The State is going into every imaginable business. When profit business fails to perform some necessary service to the satisfaction of the public, the demand springs up that the government shall take it over. When profit business breaks down, the government comes in. Now a clever scheme is to be observed; when an undertaking fails to pay dividends the stockholders sell it to the government at a price satisfactory to themselves. In Europe, cities and nations are large stockholders in profit-making corporations. The dream of the socialists is coming true, governments are going into business.

"In the mean time, as government takes on more functions it becomes more complicated. Now, in many places, it is so complex and bureaucratic that it is quite beyond the average citizen. It ceases to be responsive to the public will. The citizen feels helpless. In the United States he abstains from voting, having grown conscious of the futility of the political franchise.

"Nevertheless, when social things go wrong the great mass of people turn to the State to set them right. When capitalistic business does not provide adequate housing for the people, when the milk contains too much water or too many bacteria or too little fat, when the farmers cannot get credit to finance their planting, when foods are adulterated, when "shoddy is sold for wool-when things get unbearably bad, the people ask the government to subsidize building contractors or to put up houses, to pass laws and appoint inspectors, to lend money to the producers, to establish punishments for adulteration and misbranding, and always to create more courts and build more jails to take care of the offenders. And yet people in cooperative societies in many parts of the world are performing for themselves all of those services, and requiring no laws, inspectors, courts, nor jails. Where people do things for themselves they neither practice fraud upon themselves nor require punishment of themselves.

"The State of New York has recently had a milk scandal. Milk companies have been selling adulterated milk, dirty milk, and the milk from diseased cows. Milk inspectors have been found taking bribes. Inspectors have been employed to inspect the

inspectors. These also have proved not to be beyond the persuasion of money. Now inspectors of the inspectors of the inspectors are contemplated. There is no end. Even the powerful State cannot protect the people from profit business.

"The Basle, Switzerland, Cooperative Consumers' Society, supplies its members with milk. That means more than half of the population of that beautiful city on the Rhine. The society owns wagons for distribution. It has its own creamery for pasteurization and bottling. It owns cattle. These cows graze on the meadows owned by the society. No government is needed to make laws, to appoint inspectors, to maintain courts, to support prisons, and do things necessary to protect the consumers from the handlers and producers, because they are one and the same. There is no motive for people to produce bad milk for themselves or to distribute bad milk to themselves. People do not want to cheat themselves; but they are always willing to cheat the other fellow.

"We see that the State is an instrument to prevent profit business from taking advantage of the people, and also that it is an instrument to help profit business do just that thing. It is in favour of "nice" business that does not cause the people to cry out too loudly. When the squealing point is reached, the State steps in and stops the noise. On the other hand, the cooperative societies get along without these complications; they simply attend to their own business, which is the people's business."

The Claim of Cottage Industries

Criticising the policy of the Government which gives preferential treatment to Large-Scale Industries and neglects to promote Basic Cottage Industries, Shri J. C. Kumarappa writes in one of the issues of Bharat Jyoti :—

"The Industries Conference at New Delhi was only able to think of cottage industries as deserving patronage in so far as large scale industries wanted their help in repairs. Cottage industries would be allowed to live by sufferance. We have yet to realise that the position is just the reverse. We may resort to large scale industries only where village industries call for them. They are allowed to exist as necessary evils to cater to the needs of the industries of the people. If the blacksmith wants steel for cart tyres the steel mills will have to provide the material. Village industries are the staple food of the masses while large scale industries are poisons that are sometimes used as drugs. We cannot live on morphia and quinine "laddus" but these latter may be used in strictly limited doses when the condition of the patient needs them.

Use the Man-power

"The industrialists are full of schemes to harness power to produce more and more. To do this they want the Government to help in securing congenial circumstances and for obtaining machinery worth crores from abroad. They are thoroughly oblivious of the fact that millions of engines are standing idle at our doors unused. Those have to have fuel whether they are used or not. Every human being is an engine that demands work and has to be kept alive by being fed. Is it better economy to use this engine or to leave it idle while feeding it all the while and at the same time importing mechanical devices to do the work?

"It does not require much business acumen to answer this question. Yet, the best of our men are guilty of taking the wrong decision. We can understand self-centred businessmen wanting to make profit for themselves by the use of machinery while the nation has to bear the burden of supporting the lives of millions of unemployed and underemployed. Unfortunately, recent speeches show that even our public men are carried away by the vociferous industrialists.

after the manner of villagers. This does not mean they have to starve like the villagers. But it does mean that there must be a radical change in the old style of life.

"We have got to be ideal villagers, not the villagers with their queer ideas, or absence of ideas, about sanitation and giving no thought to how they eat and what they eat. Let us not, like most of them, cook anyhow, eat anyhow, live anyhow. Let us show them the ideal diet. Let us not go by mere likes and dislikes, but get at the root of those likes and dislikes.

"We must identify ourselves with the villagers who toil under the hot sun beating on their bent backs and see how we would like to drink water from the pool in which the villagers bathe, wash their clothes and pots, in which their cattle drink and roll. Then and not till then we shall truly represent the masses and they will, as surely as I am writing this, respond to every call".

Testing Time for Congressmen

Dr. Rajendra Prasad, the Congress President, in the course of his Radio talk on the tragic end of Gandhiji, appealed to the Congressmen to fully embibe and live up to the teachings of the Mahatma and rise equal to the occasion to establish 'Surajya' in the country. He has accused the Congressmen to be responsible for the national calamity of Gandhiji's end due to their individual and collective sins of betraying the Mahatma during his life time through their life and actions. And, if they must be true to him and his teachings, now that he is no more with us, they must be prepared to renounce lust for power and greed of material advantages to do their duty to the spirit of the great departed:

"Let all Congressmen who used to pride on following Gandhiji fully understand that the moment of their severest test has arrived. Today every Congressman has to answer himself or herself as to how far covertly or overtly he can be held responsible for Gandhiji's tragic end. Only if Congressmen had fully imbibed and lived Gandhiji's teachings the present national calamity could not have overtaken us. Gandhiji has suffered because of our individual and collective sins.

"If indeed we want to achieve Surajya which to me means the rule of right, all of us have yet to go a long way on the difficult path of discipline, sacrifice and service. My Congress comrades please do not think that you can now rest on your laurels. You have yet to suffer and sacrifice to usher in the era of peace and plenty in your country. Indeed, the real time for renunciation is now when you have got something to sacrifice. To day power is in our hands and with it also the potentialities for good or evil. At least we have got a golden opportunity to act in keeping with India's high traditions and raise India's prestige in the eyes of the world. Let us prove ourselves worthy masters and wrothy servants. During our struggle with British Power in India all our suffering was a negative sacrifice. Now is the time for us for positive renunciation of lust for power and greed of material advantages. This indeed is renunciation that Gandhiji's spirit demands from us.

May Gandhiji's supreme sacrifice evoke a higher response in us all. This is my sincere prayer and herein alone lies our country's redemption!"

Surajya literally means an era of peace and plenty. We entirely agree with the Congress President

that in order to establish such a rule, the Congressmen must rededicate themselves to follow the difficult path of discipline, sacrifice and service. Let us hope and pray that Congressmen will rise equal to their responsibilities which freedom has brought to their shoulders.

Political State v/s Cooperative Society

Free India is going to be a Cooperative Common-Wealth with justice and equality of opportunities to all its citizens. There can be no political equality without Economic equality and this can best be secured by organising entire fabric of Society on Cooperative basis. In his excellent book "What is Cooperation" Mr. James Peter Warbasse describes the advantages of Cooperative social structure over Political and Capitalistic state. A piece taken from this excellent work will be read by the readers of 'Rural India' with profit:

"What is the political state? How does it constitute an organization of the citizens which is different from other organizations? How does it differ from a cooperative Society?

"When we look into history we see that the State was created by the dominant forces in society to protect themselves from the rest of the people. It was created by a minority element to protect themselves from the majority. This has always required force. There is no State without repressive laws, penalties, police, soldiers and jails. We find that states and governments started as movements of a privileged class-nobles, lords, and kings-to have their privileges legalized and made secure. The State has always been more concerned for property than for people.

"The dominant voice in the control of the state is not the people, but those who control the property. That means the owners of the property and those who control the industries and the credit. There is a superstition that in a State, where the people have the franchise, they may make the State, do what the majority of the people want it to do. But as a matter of fact, the property-owning minority are the dominant influence in the schools, the press, the courts, the police power, and in the fields where the masses earn their living; and this minority power sees to it that the thinking, the willing, and even the voting of the majority are not free. When the mill owner places a little notice on the door-"If Mr. Bryan is elected it will be necessary to reduce wages in this mill 10 per cent, on the first of December"-the workers do not vote for Mr. Bryan. There are a thousand influences at play in the economic field by which the controlling minority dictates to the majority in the political field.

"Generation after generation of thought control and patriotism compel the approval of things as they are. Moreover, the people are not free to act through the State and make it do as they want because they are not capable of acting together politically in their own interest. They do not know how to move together to operate the complex political machine to make it serve them. They are not trained. They have not had the experiene. It is beyond their grasp. And all because it was never intended to be within their grasp. The servants in industry are not to be expected to be the masters in government. The people who go to somebody else asking for jobs and who take their orders in industry from somebody else do not become the masters in politics. The bosses in one field are the bosses in the other. There is no political equality without economic equality.

"An approach to democracy is seen in communities, villages, and small countries

"One of the most important functions of the Government in supporting village industries is practically forgotten. Government has to consume such articles as villagers make. The bulk of Government finance and power is derived from the masses and so it is but bare justice that these must be returned to the givers. The stores and supply department has to fall in line with the production policy of Government.

First Things First

"The need of the moment is not hydro-electric schemes calling for astronomical calculations to determine their cost but the production of food, clothing and shelter for the masses. Government should focus all its resources on these. Governmental powers and their finances should be hypothicated to this end. To use these powers vested in them to help the industrialist is betrayal of trust. Sri G. D. Birla's call to the Government to definitely declare their policy is not a moment too late. The people want to know whether they are entities in themselves or are mere pawns in themselves or are mere pawns in the game of industrialization.

"These are crucial days. A Government based on democracy must justify its existence by the service it renders to the people and not by the number of millionaires its policy creates.

THE CURSE OF PROFIT MOTIVE

"The dangers in the profit method of business are very great. Human life is sacrificed in its wars. Aeroplanes fall from the sky because some cheaper material was used in some important part. Railroads kill people because they are not run primarily to carry passengers but to make profits. Killing people is cheaper than putting in safety appliances Buildings collapse. Mines cave in. In the United States, 2500 miners are killed each year, largely as a tribute to the lack of safety devices. Vessels sink in the sea. Life preservers fail to hold the people up because they have been filled with something cheaper than cork. Foods are adulterated. Thouands of laws, police, courts and prisons, an army of inspectors and spies are employed by governments to protect the people from the dangers of profit business. This army is bribed and corrupted. In the pursuit of privilege, to take advantage of the people, profit business employs agents to corrupt legislatures and parliaments. Fabulous sums of money are used for these purposes. One of the modern tragedies is the reformer in politics, who is attempting, or pretending, to fight these evils. Commonly, he becomes corrupt himself, or he goes down in defeat.

"Still, great advances from the profit motive have come about. A business system, that does not have to consider what is just or fair to human beings, can go ahead and do things. The profit motive starts industries. Invention, production, and service—all for profit—have set going the great economic machinery of to-day. Big combinations of capital are bold and willing to take risks. It is other people's money that is hazarded. During the past century of profit dominance of the world, the human race has made its greatest progress in science, in safety to life, in industrial arts, and in raising the standard of living. Labour has taken part in the development of capitalism and profit-making industry, and the lot of the working people is generally better than it was at the beginning of the capitalistic era. Not so in colonies.

—*James Peter Warbasse*

COOPERATION IN INDIA

By: RALPH RICHARD KEITHAHN

The British Government did promote a cooperative department in their governments. Much effort was made, much money spent to make cooperation a success. I believe there has been some success in consolidation of landholdings in the Punjab. I have known Consumer Societies in Bangalore and Kodaikanal that have been successful. I have known village cooperatives to work well. But all this has been very largely outside the pale of the cooperative movement sponsored by the Government. The Government was not of the people. It did not promote a spirit of freedom and independent action. How could cooperation prosper in such an atmosphere! The ruler had little understanding of the true meaning of cooperation when he tried to promote it in India's villages. He created a spoonfed baby that would never be able to stand on its own legs!

But I believe the time has come not only when a strong cooperative movement is needed but when it has hopes of succeeding India is free! A strong citizenship is needed. People must learn to think for themselves. They must learn to work together. The Cooperative Movement eschews religion and politics. And yet the religious spirit is fundamental for the success of cooperation. Service must be the motto of a good cooperator. And certainly cooperation has tremendous political implications for days like these when either there is a tendency to economic imperialism or to communistic totalitarianism. Is there no middle way that will take us to the goal of complete democracy without the suppression of human personality evident in the methods generally being used today?

Cooperation Develops A Responsible Citizenry

Cooperation is a means to equal freedom. It is an economic technique that will fit in with our ideas of swadeshi—"self-sufficiency". In fact, I do not see how we can develop the village as a self-sufficient economic unit unless we do use some method of cooperation. The caste system at its best seemed to be such a technique. In some places and in certain ways it still functions so. But cooperation at its best goes beyond all present means of economic justice. There is an attempt at substantial education in the process of abundant living. There is a common sharing in the responsibilities of the business. There is equal sharing in the benefits of such cooperation. This all goes to the developing of a personality that takes its part in a society where the doing of one's duty is important.

Cooperation Lessens Social Tension

All the world over society is in tension today for various reasons. In cooperation such tension is lessened. All are at a common task. There is no vested interest on the part of any group. There is no distinction of creed or caste or class. In our Kodaikanal Cooperative Society the missionary from the West cooperates with the business man from the West and both cooperate with the non-Christian. I have never heard any accusation of conversion tactics. I have never seen any feeling expressed because one was white or black. All were in at a common task to their common advantage with no privileges vested here or there. Today we need just this kind of organisation everywhere to bring us to our common tasks and interests that the superficial differences may go to the background where they belong.

Ownership is Among the Common People

Some one has said that this is the Century of the Common Man. It is not true unless we make it so—unless there are greater changes than we see at present. Cooperation does help to bring economic ownership to the common man. We are disbanding the

Zamindaris. I see no hope of keeping property in the hands of the people unless there is some method like cooperation where unusual rewards do not go to certain people and give them advantages which they may use in collecting property. Here is a method wherein justice, equality and liberty is assured from the beginning.

Cooperation is a Vital Force in Adult Education

Perhaps our greatest task in village reconstruction is adult education. This is the crux of the whole problem. A properly educated villager will reconstruct his own village. Cooperation insures such education. Education is always associated with cooperation. It is an education to carry on one's own business. And as one does, the hunger for education increases. Leadership in cooperation is always keen in education for they know that an educated membership ensures success. The setting for a vital education is fairly certain to be present when people cooperate.

Economic Products are Guaranteed

One of the reasons why many Americans today are buying cooperatively is because they then can be sure of quality. Quality goods are not easily attained in a profit-making economy. Profit is the goal and not quality. I realise that in competition quality is also a factor. But as monopolies develop it is not always sure that quality continues. This is especially true in regard to good products. Cooperative butter is pretty likely to be the very best of butter. Much of Denmark butter and cheese has been produced cooperatively and its standard is recognised widely. In India's hungry villages, where today there is a tendency to cut quality, it is most important that we work hard to bring back quality. Most villagers need the unpolished rice which is quality rice. They cannot always secure it easily by themselves but together it should be obtainable. Again, today devitalised oils tend to flood the market. Cooperation will help us to get back to the old, natural and food-value oils. As producers, truck farmers of vegetables can sell their products cooperatively, keeping up the standard and insisting on a fair return. This is most important for such small vegetable and fruit farmers about our cities. At the same time the consumer is sure of his product if such a group does work cooperatively and buys cooperatively for quality only.

More Goods Go to More People at Less Cost

One of the largest problems today of our economical life is fair distribution of material goods. Until the present day there has often been plenty of goods on one hand and a large market on the other but no success in bringing the two together. In the past we were working on a scarcity economy because food, etc., were scarce. But today we can supply the world's needs. The economy we have-a profit-making economy-still tends to keep goods scarce to keep up prices for the sake of large profits. Cooperation thinks in terms of definite consumers' needs and tries to supply those needs. As these articles have shown over and over again, cooperation distributes all assets of such cooperation to those who do the most trading with the society. Thus advantages go where it will be the most useful in the future in taking care of further needs and markets.

Experimentation Needed

I would like to have written about the health and agricultural cooperatives with which people in various parts of the world have been experimenting in recent years. Someone in India, who knows more about its workings here in India, ought to write in detail about the "Multi-purpose Cooperative Society". There is need in India of much pioneering along these lines. We have talked much about "Grow More Food". But I have yet to see a sound approach to the problem on the basis of cooperation. Thousands of acres of waste land have been recovered in Palestine by cooperative agricultural colonies. Their success is a story all in itself. Recently

as we stopped a day at Haifa we had the privilege of going up the valley to Nazareth and we saw truly a land flowing with "milk and honey". If that can be done in Palestine it can be done in India. Some of us would like to work at it in South India. The average Indian village is a model of illhealth and insanitation. In other poor areas of the world it has been shown that poor people may have the benefit of good medical care if they organise cooperatively. This must be attempted in India's villages. Every rural worker should know a good deal about the Multi-purpose Cooperative Society. I have yet to see a good one at work. We must get some to function. Many of the present tasks we attempt might be made comparatively easy if we worked together on such a basis.

But I fear most of us know so little about cooperation that we are incapable of leading people into such a way of life. Wherever there are training camps cooperation technique ought to be a part of the course. At "Gandhi Gram" today the trainees have their own little cooperative society where they may secure books, pencils and stationery. This needs gradually to be enlarged so that as the training goes on the trainees will secure a substantial experience as to what real cooperation is like. Then they will know the advantages of such a method and will go with it more enthusiastically to the villages.

Towards World Peace

If there is to be peace in the village there must be peace in the world. I believe Kagawa of Japan has pointed out rightly that cooperation does lead to world peace. There are international cooperatives today. They need to be increased and extended. If man can cooperate across national boundaries then there can be just as much easing of tensions between nations as there is within nations. There can be just as much sharing across boundary lines as within such lines. There can be just as much education for world citizenship and responsibility as on a small basis. India has pledged herself to world peace and cooperation. She can make her own supreme contribution at that point if she makes her own place within the field of cooperation.

MAHATMA GANDHI: A HOMAGE

No match hath he in high renown,
A household name in every town
Of HIND, his languishing Motherland,
To free from the alien ruler's hand,
Made common cause with the rabble's plight
That 'Might shall not prevail the Right.'
A dauntless Crusader with courage and fire
Fighting for millions that toil and tire;
Struggling ever to make Humanity exempt,
From Subjection's woes, war-monger's contempt;
Not only his own from lands beyond,
He yearned to snap the Exploiter's bond;
His Message sublime 'all wars must cease,'
'All humans rest in bliss and peace!'
Alas! Great Voice is lying still,
A Void that tear nor dirge shall fill !!

—P. C. DUTTA.

(Copy Right-Author)

TOWARDS INCREASED FOOD PRODUCTION

By : G. B. SIRDESHPANDE

There is a deficit of only 10% of food production to maintain all the population in India A lot of propaganda was being done by the Provincial Governments to meet this deficit. But there are no signs of any appreciable improvement in the food situtation. One therefore feels there is something fundamentally wrong in the method and the remedies sought to be applied. After all, 10% increase in food production should have been achieved in no time if there has been adequate enthusiasm to achieve it.

Increased agricultural production calls for no sacrifice on the part of the agriculturist. On the contrary, it is a step in aid of his improvement. Everybody would like to improve his situation, much more so, when the Government is encouraging it. It is evident from this that there are many inhibitions towards increasing the production.

No lack of Incentives

High prices for food crop, as at present, must be a great incentive to produce more. Recent Tenancy Legislation in various Provinces has secured fixity of tenure to the peasant for a long period. Inspite of these, if there is not much improvement, the causes must be found not in the psychological realm but elsewhere. Our agricultural economists have been *unnecessarily* harping on this psychological incentive. We only pray that production may not still deteriorate in the process of supplying this psychological incentive.

Need of Big Business Methods

Wonderful development in Russia was not so much due to its Communistic principles, but to the application of modern technique in the business of Production. Its Tractor Stations, Central Power Houses, making of long lines of railways, and Roads that have brought about the 'surprising result". The simple secret is: The application of the methods of large scale production. The application of large scale production methods requires huge capital investment and great organising ability. Unless these are supplied by our Governments, no improvement in production is possible. Can we ever hope to make roads by *trampling* even by supplying paddings to the feet? It is something like this we have been attempting to do.

Recently, some of the Associations in Maharashtra (Bombay Province) have consolidated blocks of 500 to 5000 acres of land for joint cultivation and started modernised agriculture. The result has been wonderful. The yield is doubled or trebled in many cases. They are a sight for the Gods to see. Such societies will lead to improved production, less waste and less anxiety on the part of the individual owner. It is no use becoming sentimental over the independence of peasant which only means inefficient production, starvation of the many, headache to the Government and all day slavery to the peasant himself. Even in America, the land of Superlatives, half the farms have been liquidated by the Big Business Technique.

One may lament over this. Is that not desirable to begging on bended knees the food supply from other heartless countries?

GRADING OF NON-DESCRIPT CATTLE

By : **J. N. Mankar,** Secretary, Bombay Humanitarian League, Bombay

Due to the great degeneration in the quality of the cattle particularly within the Rural Areas, bullock power and milk production have deteriorated. It is therefore absolutely necessary to put a stop to this continuous degeneration with a view to produce better bullocks for agricultural operations to grow more food and to increase the milk yields of the milch cattle in India.

(2) It is now an accepted fact that the most economic and shortest way to improve non-descript cattle is by grading them by select bulls and feeding them well. Some efforts have, no doubt, been made by the Provincial and States Governments in this direction, but they are quite negligible. Further, the methods employed by these authorities lack in policy, plan, continuity and concentration. It is mainly due to this that no perceptible improvement could be achieved in this matter so far.

(3) For instance, in some of the Provinces and States, select Bulls are given on Premium System. But since the agents are the owners they seldom care to utilise them regularly for the village cattle for obvious reasons. Similarly, full complement of the Bulls required for the purpose in a village or group of villages is not supplied Hence, castration of scrub bulls within that area cannot be undertaken. Worn out Bulls are seldom replaced and graded female progeny is not held up for further improvement. Hence this system as followed hitherto within the Provinces and the States leaves much to be desired by way of improvement of the non-descript cattle to any appreciable extent.

(4) The following Plan should, therefore, be adopted to obtain real and permanent improvement among the non-descript cattle:—

(a) Areas for Grading in each district of the Province or the State should be earmarked and known as "Concentration Areas".

(b) Policy of Breed for Grading should be laid down.

(c) Long-term plans to be spread over a period of at least 15 years should be chalked out.

(d) Continuity of Grading within the Concentrated Areas must be maintained.

(e) Full complement of Select Bulls to be issued within the Concentration Areas according to the number of cows selected for grading and their regular transfers and replacements should be done.

(f) Castration of Scrub Bulls in the Concentration Areas should be undertaken by humane methods.

(g) Holding up of Graded Heifers be enforced until covered.

(h) Protection of cattle in the Concentration Areas from diseases should be ensured.

(i) Proper feeding must be enforced.

(j) Comparison of results of grading be made and necessary encouragement be given.

(5) **Bull Centre or Grading Stations (NANDI SHALA)**:—The undermentioned Scheme of Bull Centre or Grading Stations has been found to be a suitable plan for achieving lasting results for grading on the lines of Bull Clubs started in foreign countries for utilising the bulls for crossing the dairy cows. They are generally run on business lines by private agencies. There the cattle-keepers are sufficiently educated and fully realise the benefits accruing from the use of good bulls and are prepared to pay the charges for the same. But cattle-keepers in India are almost illiterate and are averse to adopt modern economic methods of improvement. Further, cattle in

crops when they are subsequently sown in the course of a crop cycle.

This is the background of the recent announcement by the Ministry of Agriculture that a target is being set this year of a 20 per cent increase in the productivity of grasslands. This does not mean that a big additional acreage has to be sown; it only means a further development of the technique of grass-farming. By more intensive fertilising, using ever-improving strains of grass and clover, and by selecting alternative crops with the highest protein yield, it is planned to increase still further food production from this important branch of farming. The Government will see to it that the co-operative schemes will enable even small-scale farmers to achieve high technical efficiency.

These developments in Britain are making a great contribution to the solution of the world economic crisis. They are also opening up long-term possibilities which will influence the efficiency of farming and the status of the farmer and the farm worker in every country of the world.

GROW MORE FRUITS
Pruning—VI

By: **B. L. Choudhury,** B. Sc. (Ag), Agricultural Officer, Patna State

PRUNING is one of the most important items of fruit cultivation but very few gardeners pay proper attention to it. Little do they realise that the failure they might have suffered is mainly due to this neglect.

What is Pruning

It is cutting off a portion of a part of a stem or root with a definite object to benefit the remaining parts. It is done according to the purpose and need of the plant.

Objects of Pruning

Pruning of fruit trees is generally done to attain the following objects :-

1. To control shape and maintain the balance of the tree and thereby correct a faulty habit of growth.

Many a time a tree does not take a proper shape and is found to develop more on one side This eventually upsets the balance of the tree which is liable to fall or to lose its branches in strong winds. This must be avoided by cutting the unwanted branches. Full care should be taken of this type of pruning from the very beginning. A well formed frame work of branches is essential to the symmetrical development of the tree. Its main branch may be pinched off so that it may develop proper and vigorous side shoots.

2 To Make a Tree Grow as a Standard

A fruit tree should not generally be allowed to grow as a bush with many side shoots coming up from near ground level and all over the stem. A well trained standard fruit tree gives a higher yield and in the orchard of such trees cultivation and other operations are conveniently performed. Do not permit the formation of branches and shoots upto the height of 3 to 4 feet according to the type of the fruit tree. Allow the most upright stem to grow straight. Remove all other branches except three to five of the strongest and best spaced ones. "In spacing the objects to aim at are that the selected branches are well-distributed round the stem and growing in a more or less outward direction" (Johnson).

3. To Remove Sickly and Diseased Portions

This is something like a surgical operation on the human body. A particular branch getting effected by some disease, insect etc. invariably becomes a source of infection. All such diseased and dying branches must be removed to check further damage.

A dead and dry branch of a tree provides a good lodging to many insects and diseases. These should also be removed as soon as noticed.

4. To Direct Plant Nutrients towards the Production Side

A tree at times develops a lot of vegetative growth at the cost of fruit production. This is controlled by cutting off a few of the branches. The shape is thus shared by the remaining branches, which by receiving more nutrients throw out fruit bearing shoots.

5. To Remove Extra Unwanted Branches

Oranges, lemons etc. develop inter twining branches and make the tree very dense. These extra branches are removed to attain proper aeration and light to the plant and at the same time to avoid waste of plant sap in noursning these branches. This also results in the increase of the size of fruits.

6. To Encourage Growth of New Fruit Bearing Shoots

There are a few fruit trees that bear only on the new fruit bearing shoots. All the branches of such type of fruit trees should be pruned after having once fruited to encourage the development of new shoots.

7. To Get Bigger Fruits by Disbudding etc.

The size of the fruits can be improved by keeping a limited number on a particular tree. This is done by plucking all unwanted extra flower buds. A better and safer method for the amateur grower is not to disbud but to pluck a few fruits when they are small. Disbudding is risky and may result in very poor or even no crop. Flower are completely removed from specially the budded or grafted plants if they flower in very young age. This is to delay fruiting till the plant has attained proper age and size.

8 To Rejuvenate by Root Pruning

Many a time a fruit tree refuses to bear fruits though it throws an abundance of vegetative growth. To get fruits from such a tree root pruning is resorted to. The idea is to cut a few of the deep going roots so that the tree may develop the surface roots and take advantage of the manures given. It is done by opening a circular trench about 2 feet wide and 2½' to 3' deep according to size and type of the tree all round the tree and cutting some of the anchor roots. The trench is then filled with a mixture of soil, manure, pieces of bones and lime and is then profusely irrigated. While pruning remember never to remove any fibrous roots.

Do not try root-pruning on an old tree. The operation may prove fatal to it. It is always safe to provide stakes to a root-purunned tree as having lost its hold in the ground it is very likely to be blown by a storm.

Though root pruning has been advised, by various authorities, there are doubts of its being successful in the plains. It is not to be recommended to the amateur fruit gardener. A specialist if he so desires may try it only as a last resort. He should take up the work during the winter season. The operation should be performed away from ths stem just below the span of the branches.

The real importance of root pruning in the plains is to use it as a corrective measure to root-rot. A tree at times is noted to suffer from some untraceable cause. It is sickly and does not put up good growth. An examination of its roots may be done. It will not be surprising to find the roots suffering from root-rot. This surely is the real cause of the poor performance of the tree. Cut out the rotting portion of the root taking about an inch of the healthy part too. Treat the cut ends by tar, cover with soil and irrigate. The tree will most probably revive.

Besides the above mentioned types of pruning there is one more type which con-

India are not so economic as to bear such charges under the present circumstances. Hence such Bull Centres or Bull Clubs cannot be maintained on economic or co-operative basis, until people become improvement-minded and cattle become more paying. Hence such Bull Centres should be run as Public Instiutions aided by Government so that in the long run, public interest may increase and they may bear the entire financial responsibilities.

(6) Objects:—The objects of the Bull Centres should be to supply and utilise select bulls for grading of non-descript cattle in the select areas and to enforce all essentials for improvement and preservation of cattle.

(7) Requirements:—(a) Every Province and State should select the area for opening a Bull Centre in each district and earmark the areas as Concentrated Areas.

(b) A Central Place should be selected for the Bull Centre and all villages lying within the radius of two miles of the Central Place should be included in the Concentrated Areas.

(c) All Cows fit for grading should be registered.

(d) Adequate number of bulls required for the purpose of covering the registered cows should be kept at the Centre.

(e) Compulsory castration of all scrub bulls and bull calves unfit for and not required for reproduction in the Concentration Areas should be enforced by Law.

(f) Policy of Breed namely, to evolve dual purpose cows, should be laid down and such breed of bulls that can achieve that object and such as are adaptable to the climatic conditions of the area should be selected for the Centre.

(g) All female progeny of the select bulls from generation to generation should be held up until they mature into cows and give female calves so that improvement may continue from generation to generation.

(h) All the cattle within the Concentration Area should be protected from epidemics.

(i) Cattleowners should be made to feed their cattle properly and keep them under sanitary conditions.

(j) Fodder Resources in the Concentrated Areas should be developed; and growing irrigated fodder (green) and silage should be encouraged.

(k) Appropriate sanitary housing, technical staff, proper feeding, veterinary aid, silage and compost etc. should be provided and demonstrated at the Centre.

(8) **Financial Implications:**—These can be calculated on the local conditions only. Hence details in this behalf should be worked out.

NEW APPROACH TO FARMING

By: Dr. GEORGE GRETTON

When Sir Stafford Cripps recently announced that British agriculture is to receive additional allocations of steel, he was spotlighting one of the most important aspects of Britain's reconstruction project. Behind the intense activity in the nation's workshops and foundries, there stands as a great stabilising factor the highly developed agricultural industry. What is most interesting is the extent to which industry and agriculture interact and combine to play their parts in the complex social and economic

development taking place in Britain today.

The days when farming and industry were two opposite and conflicting elements in the national life are long past—in Britain at least. Agriculture is a technique as skilful as processing metals or making machines. The farm-worker is guaranteed a minimum wage which compares favourably in real terms with that of any other skilled worker and his job is as much a technician's as that of anyone else.

Mechanisation

This is not simply a matter of mechanisation of farming, although this has been carried further in Britain than anywhere else. It is also a question of the all-round development of the technique of food production. Characteristic is the fact that all types and sizes of farms are mechanised. The application of mechanical equipment to the work of a large farm producing, for instance, thousands of acres of one or two similar crops is a straight-forward process. But more ingenuity is needed to introduce factory methods into a farm of 50 acres raising a variety of products.

Yet this has been done in the past few years in Britain on a vast scale. It has been made possible by a completely new approach to farming.

Recently there has been news of a nation-wide scheme to enable grass-drying to be done by small farmers on a cooperative basis. The Ministry of Agriculture is making loans and grants for the purpose of giving "practical assistance to schemes in the present development stage while they are becoming part of farming practice".

In other words, it is recognised that new techniques cannot be developed without experiment and organisation, which are often not possible except in the case of a big undertaking with capital reserves. The British Government is encouraging enterprise on the part of small farmers—who, in most countries, are regarded as a conservative class—and guaranteeing that they will have resources for development and will not be out of pocket.

Ley-Farming

The project of grass-farming was begun last summer under the auspices of the Milk Marketing Board, when 40 farmers in an area of West England combined to provide 300 acres of grassland. Co-operatively managed drying plant was employed to dry the grass thus produced. Three shifts per day, involving about 22½ hours out of the 24, were worked in order to make the running of the plant as economic as possible, and it was possible to get two or three cuts of grass from each field in the season instead of one, while conserving the maximum food value.

Grass-farming is a technique which has been very highly developed in Britain. Although the idea of treating grass or leys as a crop goes back to the 19th century, it was intensively developed shortly before and during World War II by the British agricultural scientist, Sir George Stapleton.

Ley-farming consists of alternating grass and clover crops, of which special high yielding types have been evolved, with other arable crops. "Short leys" are grown for from two to five years and either cut or grazed. When cattle are being raised on the same farm (and "mixed" farming is widely practised in England and Wales) the grazing and "treading" consolidates the young ley crop and fertilises the ground for other crops.

Greater Protein Yield

Tests have shown that the average output of dried grass from grassland of this kind is approximately 50 cwt. an acre, of which 820 lb. is protein or body-building food. This compares very favourably with the yield of roots or kale. Tests have also shown that land re-seeded under ley has increased its stock-carrying capacity by three to five times. "Treading" and natural fertilising by animals also improve the yield from grain

sists of cutting off all shoots developed by the stock, i. e. cutting the shoots growing below the joint of budding or grafting. This is very important in the case of budded and grafted plants as it is very likely that the desired scion will be killed by the vigorous growing hardy stock, if left unprunned.

Time of Pruning

The best time to prune a fruit tree is when it is in a dormant condition and is just about to enter its growing season. The time of pruning accordingly varies with the kind of fruit trees and the season of fruiting. As a general rule it may be mentioned here that the dormant period of almost all the fruits is either soon after the harvest or the winter season. Do not prune a tree when it is in vigorous growth and full of sap. Cutting of branches at this time may result in over bleeding and retard the growth.

How to Prune

The branches to be removed should be cut clean, on a slant, so that no stub is left. A good saw is necessary for this. For tender and thin branches use a secateur or a sharp pruning knife. It is of utmost importance that no jagged ends and a split stem be left in pruning as they will harbour insects and disease and will become a permanent source of future troubles. Care should also be taken not to injure the bark as it will take longer time for the wound to heal which may prove detrimental to the tree.

All cut ends should be painted with tar to protect them from the attack of insect pests and diseases.

System of Pruning

Remove all diseased, sickly, dead or dying branches. All dead portions must be removed just below the actual dead part. This means, a little portion (about an inch) of the living part too is cut off with it. This should also be followed while cutting off sickly branches.

Remove crowding cross branches to provide more light and air to the central branches. Prune all "suckers" or "robber" branches.

Cut off all shoots which have blind growth. Do not resort to heavy pruning except perhaps to remove tips etc. when once the tree has attained its shape and size. Drastic pruning is generally not good. It is exhausting.

The gardener must be very careful in using his knife and saw on trees; for a wrong use will defeat the very purpose for which it is resorted to.

Operations Akin to Pruning

1. Ringing:- This is taken as a substitute to root pruning. It consists of removing the bark all round the stem in about a half inch broad strip. The idea is to stop of the manufactured food material from going down to the roots. The roots send the plant food to the leaves which is the manufacturing organ. This crude material is received through the wood-vessels. The leaves convert it to the finished product and circulate it to assist in the growing process or for storage purposes in the roots and this sap flows through the best cells. These cells are in the bark; hence by its removal the full or partial stoppage of this finished material to the roots results.

Ringing may be complete in which case a complete ring of half to 3/4 inch of bark is removed. This is very drastic and might kill the tree. The other method is that of having two opposite half rings, made about 6" apart removing a strip of bark to a width of about half an inch. The rings, if desired, can be made overlaping one another.

The wound in all cases should be covered with the grafting tape or it may be painted with white lead.

The effects of ringing can also be affected by tying wire or string so tightly as to bury itself into the bark. The wire must be removed after six months. The monsoon is the best time for this operation.

Mr. Lancaster suggests ringing of large branches as in this way the operation is not

harmful but at the same time quite effective.

Ringing has a definite effect in increasing the formation of fruit buds and in the setting of fruits but it lowers the keeping quality of the fruits. In various cases it improves the colouring of fruits.

2. Reheading:- It consists of cutting off the branches of a tree having grown too tall so much so that the picking of fruits and other operation cannot be conveniently performed. The branches may be cut right down to a point where there is a young strong branch or good side branches to form a new head. Branches should be carefully cut using a good pruning saw. The method of cutting on the slant and other precaution suggested for pruning should be followed.

3. Dehorning:- This consists of cutting off the bent down branches. The branches due to the weight of fruit bend down and this repeated and continual bending down results in giving them a drooping from. Cut down these branches upto a point from where new branches are breaking. This corrects the defect.

TRENDS OF AGRICULTURAL WAGES IN U. P.

By: SHRIDHAR MISRA, M. A., M. COM.

Importance of Agricultural Wages

RURAL India's economy is predominantly agricultural and, therefore, from national point of view no other problem can be more important than the consideration of agricultural wages upon which chiefly depends the welfare of agricultural labourers. In fact, the problem of agricultural wages far outweighs all other problems for two reasons :

(1) Agricultural wages influence the life, labour and efficiency of workers so greatly that one can hardly afford to ignore their proper consideration in any scheme for agricultural improvement,

(2) The system of agricultural wages is so varied and complicated that under the existing conditions, no definite or uniform plan can be deviced for their regulation, betterment or standardisation, which is deemed essential for the progress of agricultural industry, on a national or provincial basis.

Characteristics of Wages

Here attempt is made to show the trends of agricultural wages in the U. P. which form a major part of the Indian Dominion. In this part of the country, agricultural wages are characterised by the following features :

(1) Wages are given in cash as well as in kind.

(2) Wages are paid daily, monthly or half-yearly.

(3) Wages are supplemented by other concessions and allowances in cash or kind.

(4) Wages are influenced by age, sex, and caste of the worker.

(5) Wages depend upon the class of employers.

(6) Wages are subject to regional, occupational and seasonal fluctuations.

(7) Wage-rates are customary or traditional rather than contractual.

Cash and Kind Wages

Wages to agricultural labourers are paid in cash or in kind or in both. The Quinquennial Inquiry into Rural wages conducted by the U. P. Government in 1944 disclosed that except for reaping in all other occupations cash payment is more common and

further that kind payment is in vogue more in the Eastern than in other regions. It may also be added in this connection that for thrashing too kind payment is more prevalent than cash payment. My personal enquiries reveal that in practically more than 80 per-cent of the villages payment for thrashing is made in terms of grain. In Azamgarh and Ballia the Easternmost districts of the province payment in kind appears to be the rule rather than exception. Preference of Kind payment over Cash payment may be ascribed to the following reasons:-

(1) Kind payment has the effect of mitigating any loss caused by fall in the value of money (as occasioned during the war period).

(2) Agricultural labourers have low standard of living and their wants are generally confined to bare necessities of life like food and so they prefer to be paid in terms of such commodities as can immediately meett heir requirements.

(3) Payment of wages in kind (particularly the Kind-rate) is traditional and therefore, those who still adhere to old customs are least willing to give up this system.

(4) In villages which are situated in the interior of a district even now many transactions are settled through the medium of grain etc. and therefore, payment in kind caused no inconvenience either to the employer or to the labourer who easily exchanges his surplus grain for other petty requirements of life.

However, the practice of payment in Kind seems to have outlived its utility and it is gradually yielding in favour of Cash payment. This is clear from the following table showing percentages that villages paying Kind wages to unskilled labourer form of those paying cash wages.[1]

Region	1934	1939	1944
1. Provincial	53.5	46.4	22.0
2. Plains	49.7	43.2	26.8
3. North-West Region	25.9	19.4	7.5
4. Central Region	19.3	17.3	5.5
5. Eastern Region	135.5	117.1	84.1
6. Bundelkhand	83.1	71.0	55.2
7. Hill tract	80.2	73.9	11.8

(1) U. P. Rural wages 1944 (1947)

Prevailing Rates of Wages—Daily

We shall first consider the case of those workers who are employed on a daily-basis. They are asked to any type of work like ploughing, weeding, reaping or irrigation. The cash wages given to such labourers are not the same for all occupations. Again, while men do all kinds of work, women do not take up hard jobs like Ploughing; and similarly children are employed only on light jobs like diverting water-channels in the field-beds for irrigation or for reaping. The rates of wages differ in all such cases. Further, there is also prejudice against caste; and so the lower castes like chamars and Passis are very often paid a lower rate than other agricultural castes like Kurmis and Kechis. It is also true that Mahajans and Zamindars generally pay lower wages than are paid ordinarily by other agriculturists. We may describe these cases one by one.

As said before, the rates may vary from village to village and so here are given only those rates which are most common and are prevalent in most of the villages:

Region	Daily rates of wages (in annas) given to		
	Males	Females	Children
Hill Tract	24 to 32	28 to 30	16
Plains:			
Western	16	12	8
Central	10 to 12	8 to 10	6
Eastern	8	6	4
Bundelkhand	12 to 16	8 to 10	6 to 8

It will be seen from the above table that wages are highest in the Hill Tract and are lowest in the Eastern Region. This is due firstly to Sparce population in the Hills and Secondly people prefer to do their work themselves without employing labourers. Consequently there is scarcity of 'labouring' population. Superfluity of the same accounts for lower wages in the Eastern Zone. More arduous and tiresome nature of work requiring hard labour chiefly accounts for comparatively higher rates prevailing in the Bundelkhand area. In the Western plain, the rate is higher because of greater prosperity of the employing classes as well as on account of greater efficiency of the labouring castes. People are more stout and hard-working in the western than in the eastern plain. It is equally true in favour of the Bundelkhand Region, where woman labour also has a fair degree of efficiency and hard working capacity.

Now, we come to differences in wages for various occupations like Ploughing, Weeding, Irrigation, Reaping and Thrashing. Here it is observed that remuneration for Ploughing is the highest in all regions and that for weeding is the lowest. The difference, however, on either side is of one to two annas more or less than the Day-rate. This difference is marked more in areas where land is hard and therefore, requires deeper ploughing. Similarly, in case of irrigation the rate is lower for those labourers, who simply divert water-channels in field-beds. Those labourers, who work on the well for lifting water-bucket usually are given higher wages. In case of irrigation by Lift or *Beri*, the workers are paid naturally more as it causes great physical exertion and fatigue.

The wages paid by Zamindars and other big landholders are frequently lower by about 20 to 25 per cent than the payment made by ordinary agriculturists (sometimes known as *Grahasthas* or family-holders). This is so because of the influence exercised by land-owners (better called as 'Maliks' or masters) over their 'Men'. This tendency is noticeable almost throughout the province remarkably in those areas which have not been affected much by political awakening and where kind economy is stronger than cash economy and where people are not so self-conscious. Though it is highly necessary and perfectly right that such differences should disappear in order to guarantee a Fair-wage to the labourers, it is also correct, as the opinions were expressed by both employers and the labourers to me during my talks with them in the course of this enquiry, that the labourers, except for recent awakening, bear no grudge or malice towards their employers on this point of lower wage-rates. They appeared satisfied in as much as they are allowed free-of-charge housing facilities, liberty to graze their cattle, cut fuel for their requirements on their master's land.

The wages paid to 'untouchables' or depressed classes are sometimes lower than those given to labourers belonging to higher castes. Although this practice is not very common, still to the extent it prevails it does influence the wages-rate and, therefore, its consideration cannot be altogether passed-over. The wages of these caste-labourers are lower by 10 to 20 per cent than the usual Day-rate. This is mainly due to lower social status enjoyed by such classes and also because they themselves do not seem to be much anxious to demand a higher rate on account of their life-long servitude and debt-bondage to superior castes and land-holders. They also have a very low standard of life. Their quantitative productivity cannot, however, be challenged for they are very hard-working, though certainly in quality they are less efficient than those who are agriculturists by caste and birth.

Wages of "Fixed" or Permanent Labourers

After having described the trends of wages of Day-workers, we shall now study the case of labourers who are attached more or less permanently to big land-holders and superior-caste agriculturists. These labourers

are known by different names in the province, such as 'Harwaha' or 'Bhataita' in the Eastern districts, 'Mehanti' in Meerut, 'Mahindar' in Barabanki, 'Halli, in Jhansi, 'Chakar' in Jalaun and Hamirpur, 'Jan' in Banda, 'Kamera' in Bulandshahr, 'Naukar' or 'Mazoor' in Etawah and 'Baramasi' in Sultanpur and Rae Bareilly. Sometimes they are also termed as 'Adami' or Men by some Zamindars.

Such Fixed labourers are mostly paid on a monthly basis and are engaged either for a period of five to six months (from ploughing to harvesting season of a crop) or for the whole year. The methods of remunerating them are very complicated. Convention or customary traditions are the chief determining factors. They have their wages fixed in Cash, in land or *Khet* and in grain to be given at the time of Reaping and Thrashing. Cash-rates and area of land allotted to a labourer are more definite and can give us a comparative idea of the conditions in different regions and, therefore, we shall consider them first.

Region	Monthly wages Rs	Land allowed
Western Region	12 to 15	4 to 5 Bighas
Central Region	10 to 12	1 to 2 Bighas
Eastern Region	3 to 5	1 to 2 Bighas
Bundelkhand	4 to 8	2 to 3 Bighas

It may be noted in this connection tha and allotted to labourers is held not on the ame terms in all the regions, nor do these onditions provide any idea of comparative ignificance. Still, the common practice is that and is cultivated in *Sajha* or *Batai*. The wner pays rent, lends his bullocks for loughing and contributes seed and in return, hen the crops have been cut and thrashing is ompleted, the fodder is given over to him r his cattle. The main motive is to give as uch benefit of land as possible. But usually is land is not of high fertility.

The employment of such fixed labourers is very common in the hills and hence they have been ignored in the above table.

Besides what is given in Cash or by way of *Khet* and its produce, the labourers are given share in grain at the time of Reaping and Thrashing. This share is also given to Day labourers, when they are employed for these occupations. This payment is known by different terms such as 'Dabi' in Cawnpore, 'Lahna' in Banaras, 'Pulla' or 'Akwai' in Jhansi, 'Launi' and 'Dauri' in Azamgarh. In this payment the labourer approximately gets 4 to 5 seers of grain every day. In the Eastern region certain employers also invite their labourers after all operations like sowing etc. have been completed to 'Kurmunan' (feast given to labourers).

Other Supplementals

There is also in vogue a very common practice of providing labourers, both Day as well as Fixed while they work on the fields, with supplementals called by various names such as 'Kalewa', 'Nasta', 'Chabena', 'Pani-Piaee' or 'Khana'. This provision is given in the form of Breads of coarse grain, 'Matha', Parched gram, 'Gur', 'Sharbat', 'Ras', 'Sattoo' or 'Atta'. The idea behind it is to give some breakfast to the labourers before noon, as they come with day-break and sometimes work for the whole day without any break. The quantity of this provision is between four and eight chhataks. In addition to this, the labourers are also given a pice or two for Tobacco each day. These facilities are conventional and largely depend upon the mutual relations between employers and the labourers and also upon the generosity of the former. But They are provided quite freely and there does not appear any motive of bargaining on either side.

Fixed labourers are also given 'Teohari (festival gifts in the form of food etc.) on ceremonial occasions. Old clothes, one quilt or blanket and a pair of shoes are an extra favour allowed to the labourers each year by good employers.

Time-fluctuations in Wages

In relation to time wages have showd

tendency to fluctuate. Such fluctuations are not uniform all over the province. The following table will illustrate this point:

Regional Indices of wages of unskilled labour with year 1911 = 100

Region	1916	1928	1934	1939	1944
Province	124	186	124	134	379
Plains	117	182	117	134	465
Bundelkhand	126	189	120	136	486
Hill Tract	125	187	148	133	494
North West	120	182	118	138	571
Central	113	180	117	129	394
Eastern	118	183	117	134	384

(2) Vide: Rural Wages in U. P. (quinquennial Report) 1944 P. 99.

From the same Report, the following figures showing percentage rise in December 1944 over August, 1939 in cash wages in different occupations in different regions are worthy of note:

Occupation/Region	Plains	North-west	Central	Eastern	Bundelkhand	Hills
Unskilled labour	241	313	208	188	261	219
Reaping	269	300	231	315	300	148
Weeding	193	269	146	146	229	186
Ploughing-Daily	239	287	218	198	168	153
Ploughing-Monthly	153	200	154	182	103	183

It may be noted with interest that highest increase for most of the occupations is recorded by the North-West region. If we compare cash and Kind wages with each other, the former show greater rise than the latter. The percentage rise in December, 1944 over August, 1939 in Cash and Kind wages for unskilled labour in the province as a whole was 260 and 200 respectively. This is so because of the fact that Kind rates are conventional, while cash rates are in the nature of Contract rates and therefore, the latter change more quickly than the former with change in time and conditions of life and labour. The World war II mainly accounts for such change in the wage rates.

Seasonal Variations

Agricultural Wages tend to vary from season to season. During the 'Off' time, when there is not much agricultural work to be done, labour is plentiful and cheaply available for all types of work or it is directed to non-agricultural jobs. In the sowing and harvesting period wages sometimes tend to rise even by more than 20 per cent on the usual day-rate on account of scarcity labour-supply. The sowing and harvesting seasons during which there is rush of work and consequently, there is increase in the wages-rate are given below:

Crop	Sowing period	Harvesting period
Ravi: Wheat, Barley Linseed, Peas Mustard etc.	Mid. Oct. to November	Mid. March to April
Kharif: Paddy, Jwar, Maize, cotton, Bajra etc.	End May to July.	End August to November

Thrashing does not substantially effect the wages, because this work is done mostly by Fixed labourers, or in case of small agriculturists, by themselves with the help of family-members.

Agricultural Wages Vis-a-Vis Urban Wages

For factors more than one, which it would be out of place to discuss here, the Urban wages in all occupations are higher than agricultural wages. This fact has its effect upon agricultural wages in those villages which are situated in the vicinity of big towns or cities and places of industrial location. The wage-rates have an upward trend in all such places. In this respect concentration of towns and cities is greater in the Western Region and it diminishes gradually as one proceeds from West to

East in the province. The total number of towns in the various political divisions arranged in order from West to East was as below in 1941:—

Division	Area	Number of towns
Meerut	9230 sq. m.	83
Rohilkhand	10865 ,,	66
Agra	8646 ,,	70
Lucknow	12002 ,,	44
Allahabad	10102 ,,	37
Fyzabad	12069 ,,	34
Banaras	9460 ,,	39
Gorakhpur	9563 ,,	29
Jhansi	10553 ,,	29
Kumaun	13757 ,,	14

In all such places there is tendency among the agricultural labourers to migrate to centres where they can get high wages, even though temporarily. This often leads to acute scarcity of labour in agriculture during the busy season, when even as high a rate as Rs. 2/- per day is reported to be offered by agriculturists in districts like Kanpur, the great industrial centre of the Province. Improvement in transport facilities has given philip to this trend of wages.

Miserable Plight of the weavers of Aurangabad (Gaya)

By: Prof. **LAKSHMAN PRASAD SINHA**, M. A.

HANDLOOM weaving industry is an important industry of Aurangabad subdivision in the district of Gaya. The total number of looms of all the nine thanas which comprise Aurangabad subdivision comes to about 5862. Out of this 94 looms are engaged in the making and the weaving of carpets. The remaining number of looms are engaged in the production of cloth known as "Motiyan". The industry therefore provides employment to at least six thousand weavers. The total population depending on this industry including workers comes to about thirty six thousand. There are three categories of weavers, viz (a) weavers having cultivation to supplement their income. (b) weavers having service to support their family, and (c) weavers having no avenue or source of other income but weaving is their only mainstay and occupation. The lot of the third category of weavers is really pitiable and heart rending. Their grim and agonised look reveals the depth of misery and affliction through which they are passing. During the present period of economic crisis, shortage of consumer goods, rising spiral of prices, moving and soaring cost of living, their position can well be imagined than described. Their grievances are many. Their miseries are legion. Their sufferings are unfathomable. Their difficulties are numerous.

The Present Practice of Yarn Distribution

At present the weavers are getting the yarn through the agency of whole sale dealers. In the month of September 1947 the supply of yarn amounted to 99 bales of finer and coarser counts. In July and August 1947 the joint supply amounted to 103 bales of different varieties. So, roughly speaking the average monthly supply comes nearly to 74 bales of yarn of different counts. It is the general principle prevailing that ¾ of a bundle is supplied to the weaver per loom which is most inadequate and insufficient. The price charged is the retail price fixed by the Mill producers. The yarn supplied is generally of the coarser stuff, not very suitable for handloom weavers. The systen of distribution of yarn too is far from satisfactory. There is no card

ystem for supply to weavers. The weavers are not privileged even to see the allotment chart and hence do not know what amount has been received and what quantity they are to get. None of their representatives is allowed a seat in the subdivisional Advisory Board which caters local needs of the public. Besides due to non-existence of any system many persons impersonate for others and take their delivery. Rahman may pass on for Rahim and may take his quota. Afzal may pose himself for Afzal Mian or Afzal Hussain. These difficulties and malpractices being rampant with impunity under the very nose of the so-called "control authorities" in fact, fill the cup of their miseries to its brim. From economic stand-point the system is defective at its core. The price charged is retail sale-price. The already fattened whole-seller gets a profit of 7 percent on the bulk for handling distribution. The total supply of bundles to the whole-seller per month roughly amounts to 4000 in number worth Rs. 50,000 approximately. He gets the goods at the whole-sale price which is less than the retail price by Rs. 1/8 per bundle. Thus the total gain of the said whole-seller in one quota of supply comes to about 3500/- as profit and roughly Rs. 6000/- because of the difference between the whole-sale and retail sale price His total gain therefore comes to Rs. 9500/-. This present system of distribution is therefore defective from many angles and on various stand points. It leads to bungling and the weavers suffer. It leads to high prices of yarn as the supply is done through the agency of middlemen and finally the most demands of the weavers remain unsatisfied. In short this system requires revolutionary and fundamental changes. The present system is at the root of the trouble and is the major cause for the sad economic plight of the weavers and as such demands thorough over-hauling.

Hence, 'what the basic demands of the weavers are' is the most pertinent question. The demands of the simple, poor, downtrodden, humble and dumb weavers are straight-forward and genuine and can be easily met provided the Government takes the sympathetic attitude. What they are demanding has been met and provided elsewhere in our province. Ours is the only subdivision where the Governmental authorities are showing indifferent attitude and providing step-motherly treatment to the genuine grievances and basic demands of the weavers at the instances of some self-seekers who stand to gain wrongful profit out of it. These weavers' constant endeavours have been that their Association known as the "Aurangabad Sub-divisional Handloom Weavers" under the Presidentship of Mr. Md. Hussain Ansari be recognised as their sole institution by the Provincial Governments so that this centralised body may try to ward of their real and practical difficulties and genuine grievances in the best organised manner and at suitable fronts.

That this Association should be primarily entrusted with the task of distributing the yarn to the weavers in all the thanas of the subdivision through its respective Thana Organisations. The thana organisations are already formed and knit together by the central subdivisional organisation which can ill-afford to ignore the best interests of the weavers upon whose betterment and economic up-lift the entire fabric of the foundations of their organisation solely rests. Distribution of yarn through this agency of Association will not only remove the bungling, which is rampant in the entire sub-division, but the "Association" will materially prosper thereby and the most real persons would then deservedly be receiving the whole-seller's profits which have hitherto been filling up the coffers of the already fattened capitalists.

That the present supply of yarn is admittedly inadequate. The material is hardly sufficient for the purposes of weaving for the whole month. The loom works for one week only and remains idle for the remaining three weeks. Hence the weavers want

that atleast 2 bundles of yarn should be given to them so that the loom may remain in operation for the whole month. Out of the meagre supply of ¾ of a bundle they are earning a net income of Rs. 20/- or 22/-. This is hardly sufficient to support or maintain the worker, what to speak of the family members. An average family of a weaver consists of 6 persons including the adults and children.. The increased quota of supply is expected to increase their net earning to something like Rs. 54 or Rs. 56 which will enable him to maintain his body and soul together. They further detest that the quality of yarn supplied should not be very rough and coarse which ill suits their requirements and purposes.

Besides they want that only the weavers are supplied the yarn and not the capitalists. Individual persons and organisations are getting the supply of yarn at the cost of the weavers which further adds to their miseries.

The membership of the weavers' association is round about four thousand. It has a central sub-divisional head quarter at Aurangabad. Its President is Mr. Md Hussain Ansari and its secretary is Mr. H. Md. Ismail Ansari. It has a central body of 11 members. The weavers want that organisation should be recognised by the Government as it is the sole custodian and champion of the cause of the weavers, being the only organisation which stands for the betterment of their lot.

This central body controls and supervises the workings of the various Thana committees already vouchsafed for interests of the Thana weavers of their respective localities. This Aurangabad Subdivisional Weavers' Association is in its turn affiliated to the Provincial Weavers' Association under the Presidentship of Mr. A. A. Md. Noor, Parliamentary Secretary, Bihar Government.

Economic Implications of Their Demand

All the above demands of the weavers are genuine and can be supported on sound economic principles and grounds. All the ills and maladies of the weavers can be removed if the struggling Association gets the recognition at the hands of the Governmental authorities. This association is intended for emancipation from the economic and financial distress and is primarily wedded for their social and cultural betterment and progress. The yarn distribution through the agency of the weavers' Association will lead to a net income and gain of Rs. 9000/- or so per month which can be utilised for the betterment of the lot of the weavers in general. At present, this amount is being pocketed by the middleman and is a social loss. Besides, the weaver will be the gainer in the shape of reduced prices of the yarn. He will have to pay less than what he is paying at present. The yarn will be given to him on wholesale price which is less by Rs. 1/8/- or so per bundle from the retail price. The association will be satisfied to earn for the weaver community a margin of profit of 7 percent. This total gain minus the expense charges of disposal will in the final analysis be utilised for the welfare of the weaver masses in consultation with the members of the Government. The supply position of the yarn of weavers will also be better. The weavers may be able to earn more provided the Government increases the supply of yarn quota and the basic demands of the weavers of 2 bundles per loom is met.

Conclusion

In conclusion, it can be said that if all the demands are met and fulfilled, the problems of the weavers will be solved. The cloth famine, and scarcity of the bare necessaries of life which are figuring and looming large on the horizon may also be solved to a large extent. The weavers with increased quota of supply will undertake to the production of other kinds of cloth namely Dhoti, Sari, etc. which will help a long way to solve the cloth crisis and cloth famine. The development of this industry will help the idea of decentralisation in Textile Industry which is the main hope of regeneration and amelioration of the condition of masses. Herein lies the hope, the cheer, the sunshine for the betterment of the condition of the weavers.

SOCIAL SERVICE IN THE VILLAGES

By : G. JOGIRAJU, Assistt. Director of Agriculture (Retired)

AT a recent provincial conference in Madras, the representatives of 36 associations devoted to the promotion of social welfare discussed various problems, rural and urban, which confrot workers in different fields.

Apart from the general uplift of the masses and the improvement of the general standard of living and health, two classes of people deserve prior attention of social workers. One consists of the few old or maimed destitutes, who cannot themselves work and earn their livelihood nor have anybody else in their family whom they can look to for their support. Another class consists of the poor, who, though capable of earning their livelihood under normal conditions, sometimes find themselves in distress on account of illness of one or more members of their family, especially the working members, or other unforeseen calamity. The former class of people have to be fed, clothed and if necessary given medical aid also. The latter class of people usually larger in numbers require only temporary help. In this short article, it is proposed to suggest a feasible way of organising relief in respect of the above two classes of people.

As in the case of the production of the primary needs–food and clothing–of the mass of rural population in general, the above item of social service also should, as far as possible, be preferably organised on a decentralised basis, the village being the primary unit. In every village there are ordinarily, a number of families with means above their reasonable wants, who, if made to realise by means of suitable propaganda, that ' the village is one whole family and that it is the duty of the well-to-do members of the same to see the needs of the less fortunate ' could cooperatively undertake to help their destitute and poor brethren in the village without any great sacrifice of their own comforts. And if every village thus organises for the alleviation of misery in that village, the problem ceases to be so formidable as it might otherwise look.

The heart of the average village in India is still sound and fairly tender and the ideals of a *dharmic* and spiritual life on which Indian civilisation has been built up and sustained for thousands of years, may yet be revived by a judicious approach. As Sir S. Radhakrishnan had once said, 'the individual's true interest lies in the realisation of his self's identity with the Self of the Universe' and that 'this can be attained through the voluntary sacrifice of his earthly possessions in the loving service of humanity',

As an example of an humble attempt to bring the above ideal into practice even to a small extent, may be mentioned the organisation of an institution named 'the Sree Rama Dharma Nidhi' at Kondevaram in the East Godavari District of the Andhradesa, and registered under the Indian Societies' Registration Act of 1860, with a membership of thirty two, of which seven form the Governing body. The Nidhi has at present a permanent fund of about Rs. 3000, a landed property of about an acre of valuable wet-land and small house. From the annual income from the above, and from subscriptions and casual donations in kind and cash collected chiefly at the time of harvest of the paddy crop, three old, blind and destitute persons of the village (one man and two women, of whom one, a woman, died a natural death recently) have been fed and clothed during the past three years, while every year, a few other poor and deserving people have been supplied with. blankets for winter use. A larger number have been given medical aid

the wood available. No individual was allowed to take interest in the forest industries as there was no encouragement with so many restrictions not known in the foreign industrial circles.

It is now high time for the popular Government to chalk out a healthy and systematic programme immediately to increase the timber wealth by replacing the present irregular and unproductive areas by valuable plantations. Timber is not an article that can be manufactured in a factory like nut and bolts. It takes sufficient time to reach an exploitable size. Whatever material in the unproductive areas should now be utilised and proper plantations grown for future use, on the basis of *more timber in less areas.*

National prosperity does not base on the gold mines alone. In the absense of coal mines and New Castle production, the British industries would have collapsed long ago. No nation can afford to neglect the industries and commerce which are considered to be the pillars of national prosperity. Stability, efficiency, sincerity and honesty are the four walls and assured markets and guaranteed income to all concerned, namely, the State, the shareholders or capitalists and the workers alike, are a physical and mental tonic for the whole construction of industry. In England, planters tried to get several Indian trees naturalised there but in India not a single foreign species on a large scale appears to have been tried.

The foreign planters came to India and Ceylon, secured vast areas for forest lands, cultivated and converted the unproductive forest lands into productive plantations of cocoanuts even on the top of hills in Ceylon, coffee, tea and rubber in Nilgiris, Cannon Devan hills, Mysore, Malbar, Cochin, Travancore and Assam forests. Not a single plantation of this kind is seen in Bombay province inspite of natural facilities that exist in this Province particularly in the North Kanara district, Western Ghats slopes.

There are for the present two kinds of forests, (i) organised forest measuring about 8,000 sq. miles are under the proper working plans; (ii) unorganised forests measuring about 3,000 sq. miles are not under the working plans and are, therefore, considered to be unproductive. Out of the 3,000 sq. miles of unorganised forests, certain areas should be given to the non-official industrial agencies to grow plantations of their industrial species. Match companies for matchwood, plywood companies for plywood species, paper companies for species useful for mechanical pulp, some more planters agencies should be formed and the work of plantations to be entrusted to them on co-operative basis.

A firm capable of working about 500 acres a year should be given 20,000 acres at their disposal. Their requirements should be one saw mill, one drying kiln, monkey winches for uprooting trees, tractors for hoiling logs, motor lorries for transport purposes, with sufficient finance for working the forests, all sales to be made through one sale society on co-operative basis.

Rates of Royalty should be fixed according to the distance of the forest from the market or on the basis of average of the previous 5 years before 1939, in that particular area. This is only to grow more good wood for industrial development in future.

Species to be planted should be useful for the following industries:- (1) Matches, (2) Plywood, (3) Mechanical Paper Pulp, (4) Furniture, (5) Bobbins, (6) Shuttles, (7) Other textile accessories, (8) Ship and boat buildings, (9) Aeroplanes, (10) Carts and agricultural implements, (11) Railway requirements.

Sufficient areas for cattle grazing, pastures, with plantations of special fodder, trees for cattle fodder and firewood, agricultural and household requirements should also be provided.

AMERICAN COTTONS IN INDIA—THEIR INTRODUCTION AND DEVELOPMENT

By : MUHAMMAD AFZAL

THE history of the introduction of American cotton in India is a romance of the 19th century when the different industrial countries of the world were tapping new sources for raw materials. The efforts of the East India Company in introducing this cotton and the persistence with which the early experiments were carried out are considered to be a landmark in agricultural experimentation.

Prior to 1747, England used to get its requirements of raw cotton, which did not then exceed 4,000 bales per annum, from India. The inventions of Hargreaves, Arkwright and Watt, however, changed the position and, with the rapid industrialization of that country, the demand for raw cotton increased enormously.

The first consignment of American cotton of seven bales reached England from Charleston in 1747. In 1784, another consignment of 14 bales was shipped to England from America, but it was seized in Liverpool as contraband. The legal difficulties in importing cotton from America were soon overcome and the American exports of cotton to England mounted rapidly. The United States of America exported 3,200 bales in 1794 and in 1811 the American exports reached the figure of 93,500 bales. During the latter year India exported only 10.252 bales to England. India thus, gave way to America as the premier source of raw cotton in little more than half a century. England was, however, still doubtful of consistent supplies of raw cotton from America and the passing of the Non-Intervention Act in 1809 strengthened this doubt. The Court of Directors, anticipating deficient supplies from America, ordered all private ships to bring cotton from India. During this year 60,000 bales of Indian cotton were imported into England, but the quality was so poor that most of it remained unsold. In 1811 the supplies from America were very large and the Court ordered that no Indian cotton should be shipped on its account and urged the Government of India to secure greater cleanliness of the produce and to introduce better staple. The improvement in staple was sought to be achieved by the introduction of American cotton into India.

After Several Failures

The first consignment of American seeds reached India in 1818, but regular experiments on these cottons were undertaken in 1829 at the suggestion of Lord Ellenborough who recommended the cultivation of all finer sorts of foreign cotton in different and distant parts of India under every different circumstance and climate. During this year Dr. Lush was appointed to superintend the experments on foreign cotton. He opened an experimental farm in 1830 at Shigi-halle, a village near Belgaum in Bombay Presidency and tested eight varieties : (i) Georgian, (ii) Sea Island, (iii) Upland Georgian, (iv) New Orleans, (v) Louisiana, (vi) Pernambco, (vii) Bourboun and (viii) Egyptian.

These experiments were continued up to 1836 and were declared to have failed. In 1838 several firms in England sent an urgent appeal to the Court of Directors praying them to improve the quality and to extend the cultivation of cotton in India. On this representation Captain Bayles of the Indian Army was deputed, in March 1839, 'to proceed to America for the purpose of obtaining information, seeds, machines for cleaning and of endeavouring to induce persons well-acquainted with the cultivation of cotton to proceed with him to India'. He returned in 1840 with ten planters, three of whom were sent to

1 Cotton Return, 1847.

of a simple nature, chiefly to patients suffering from malarial fever, complicated cases being referred to the L. F. Hospital at Pithapuram, the Taluq head-quarters, about two miles away. It is hoped that as more funds become available, in course of time, the scope of service rendered by the Nidhi will be widened.

To attend to the other aspects of social improvement and amenities in the village, a 'Gramabhivriddhi Sangham' in which every adult inhabitant of it is eligible for membership with or without payment of a subscription, and a statuary Panchayet Board have also been organised. It may however be stated that though, as a result of the past ten years' work in the village, there has been some general awakening and systematic organisation, the desired degree of a spirit of self-help and cooperation for the benefit of all could not be yet created, the restoration of a village to its former self-sufficient happy condition naturally requiring decades of patient and continuous work.

x x x x

Abstract from the Articles of Association of the Sree Rama Dharma Nidhi, Kondevaram

Objects:-The main objects of the Nidhi are :-

1. Repairs and upkeep of the two Ramamandirams of Kondevaram and provision for 'Dhupa deepa naivedyams' in connection with 'Bhajanas' and worship at the same, the total annual expenditure on these not exceeding Rs. 36.

2. Maintenance of the maimed and helpless poor.

3. Making gifts of cloth to the same.

4. Provision of medical help to the needy poor.

5. Provision of food and clothing and help for the repair or reconstruction of dwellings to needy poor when afflicted by calamities such as from fire etc.

6. Promotion of adult education and enlightenment.

7. Other philanthropic measures which may enhance the happiness of poor.

Membership :-There will be three classes of members viz.

1. First Class Members :-Those who make a donation of Rs. 1000 or more in cash or make a gift of immoveable property valued Rs. 1000 or more, or any moveable property valued Rs. 1000 or more.

2. Second Class Members :-Those who make a donation of Rs. 200 to Rs. 999 in cash or make a gift of immoveable or moveable property valued Rs. 200 to Rs. 999.

3. Third Class Members :-Those who give an annual subscription of not less than Rs. 10 in shape of any useful immoveable property.

First and Second Class Membership will be hereditary.

Permanent Fund and Working Income :-Gift and donations amounting to Rs. 200 or more shall be considered the permanent fund of the Nidhi. Donations and gifts less than Rs. 200 in value shall be treated as working income.

Management :-The management of the Nidhi is vested in a governing body consisting of a President, a Vice-President, two secretaries and three other members.

TIMBER

M. VITHALRAO

Timber is so old that no forester, Sylviculturist, Geologist can tell us its age within tens of thousands of years and trace its birth. At the same time, it is wonderfully so young that the Chemist and the Physicist are always finding a fresh way of treating it into new products for enthusiastic people to get excited about. Cut and shape it, you have got furniture. Slice and peel it you have ply wood and laminated board. Shread and press it for a wall-board. Grind and mix with some sort of resins and you will have some form of plastics. Digest and pulp it for cardboards, writing-paper, rayon silk and toys. From cradle, cot, chair and toys, for a baby from the moment of its birth; for stretcher, coffin, or firewood after its last breath, timber is mostly required.

Yet, it is the same timber that is unknown to anybody as to how and when it was first born. It is equally difficult for a Chemist to say exactly when and where his research activities discover so many by-products from this timber will cease. Every time he finds a new species in the forests he finds new products. The more he works on it, the more excited results he discovers.

We find thousands of different species of timbers, shrubs, bushes and creepers under several natural orders, cooperating with each other so nicely that everyone of us including the custodians of the Forest areas can easily realise how their universal brotherhood is built for the benefit of human beings and functioning in the woodlands. As regards tolerance, it is exceedingly wonderful and enviable and confirms the virtuous ethics preached by Shree Bhagwad Geeta, Holy Quran or the Sacred Bible. Every plant is extremely industrious, day and night to produce the most important food in the form of oxygen and carbon dioxide for their own use as well as of animals and human beings. Every plant is prepared to face the death without an existence like Jesus Christ, Pralhad and others for the benefit of human beings.

Even the axe the destructive weapon of the felling operation requires the wooden handle; thus the existence of the tree is entirely for the benefit of human beings. It is, therefore, in the interest of the nation and every human being that large-scale plantations are grown systematically of certain species of industrial importance, so that present irregular and unproductive and uneconomical areas may be converted into regular and productive areas useful for development of industries and national wealth and prosperity. Useful forests and minerals are the hidden treasures of the nation and unless properly attended to and utilised, cannot be converted into wealth and prosperity.

Since the Forest Research Institute, Dehra Dun, was opened, the custodians have done a great and useful service to the Indian community in general and the Forest Dept. in particular. Any problems, in the timber line are solved by them when approached by the members of the public. Some decades ago, Messrs. Troup and Pearson of the above institution tried to get the Forest Department and the public interested in the softwood plantations, particularly for the match industry. The attention of the forest department was, however, concentrated towards the plantation of teak and other hard woods that were saleable in the Forests Depots by auction. The softwood plantations and their importance were not only ignored but the coupe contractors were freely allowed to burn the softwood species in the coupes to convert into *ASH* whereas the foreigners in other countries were actually converting similar species into *CASH* by utilising every feet of

Bombay, three to Madras and four to north India and Bengal. Captain Bayles also brought 'seeds of the best kind, especially of the Mexican plant, now most valued in Alabama and Louisiana, also saw gins by several makers, as Brookes, Carver and Idler.'

With the arrival of the American plantres and seed, the experiments on the cultivation of American cotton were undertaken with vigour and zeal throughout the length and breadth of India. At most places, however, it was found that the American cotton plant did not at all do well as these places were uncongenial to the planters and unsuitable for the varieties. The planters sent to the northwest were out of heart in 1842 and 'they were all desirous of going elsewhere for the benefit of a damper climate'. Thus while most of the experiments started in 1840 were soon abandoned, the experiments in the Bombay Presidency proved more hopeful and the New Orleans cotton offered good prospects of success as the figures given in Table I will show:

TABLE I

Yield of New Orleans cottons as compared to Local

Area in acres	Name of variety	Yield in lb. per acre: Seed-cotton	Yield in lb. per acre: Lint	Ginning percentage
10·0	New Orleans ...	286	88	30.8
10·0	Local (Kumpta) ..	198	44	22.8

The New Orleans cotton established its superiority and the area under it increased rapidly. The figures given in Table II indicate the increase in area under this cotton.

TABLE II

Area in acres of acclimatized American cotton in the Bombay Presidency

Year		Area in acres
1842	...	27
1843	...	545
1844	...	2,749
1845	...	11,176
1846	...	22,331
1847	...	20,502
1848 52	...	24,249 Acreage of five years
1853–57	...	82,060 ,, ,, ,,
1858–62	...	216,909 ,, ,, ,,
1863–67	...	294,159 ,, ,, ,,
1868–72	...	317,780 ,, ,, ,,
1873–77	...	191.640 ,, ,, ,,
1878–82	...	149,844 ,, ,, ,,

It will thus be seen that the Bombay Presidency was the first province in India to produce bulk supplies of American cotton. The spread of these cottons to the rest of India, except Madras, took place at a later date from the stock of acclimatized American cotton produced in Bombay and the name of Dharwar, where the first experimental station was situated, is now famous all over India.

During the Viceroyalty of Lord Curzon in the opening years of the 20th century, the interest in the growth and production of American cotton was revised throughout India and even private firms like Messrs. Mela Ram & Sons, Lahore, and Mr. A. Steel of Messrs. A. & F. Harvey of Virudupatti (Madras) took active interest in the growth of American cottons. Messrs. Mela Ram & Sons were instrumental in collecting seeds of 'Punjab Narma' (stray plants of acclimatized American cotton in the Punjab) and laying the foundation of the present-day Punjab-American cotton. Mr. Steel is responsible for the rapid spread of Cambodia cotton in Madras.

The history of the introduction of Cambodia cotton in Madras is also very interesting. Mr. C. Benson, a Deputy Director of Agriculture, obtained, in 1904, a small quantity of Cambodia cotton seed from Monsieur A. Paulain, the President of the Chamber of Agriculture, Pondicherry, and grew it in a small patch of soil. The plants did very well indeed and the produce came accidentally into the hands of Mr. A. Steel, who grew the seeds obtained from it in the compound of his press in 1906. Mr. Steel was highly impressed with the performance of the plants and took care to store and gin the produce separately. This seed

soon spread in the district and during 1906-07, 40 bales were produced. In 1909 there were 1,605 bales and 7,500 bales were produced in 1910. Thus the foundation of the Cambodia cotton industry was laid in Madras. The area under this cotton at present is 501,000 acres.

After several failures, the American cotton plant was, during the course of the 19th century, acclimatized in India and the beginning of the present century saw its spread on a very wide scale.

Present Position

As has been said above the American cotton plant has come to stay in this country. It is now being grown practically throughout India wherever the soil and climatic conditions are suitable.

With the inauguration of the Indian Central Cotton Committee in 1921, the work of improvement in yield and quality was accelerated by the appointment of special staff in most of the cotton-growing provinces and States. As a result of this, improved varieties of American cotton are now growing over several millions of acres in the length and breadth of India.

x x x x

Future Prospects

The future is in the lap of gods and even in normal times it is difficult to judge accurately the course of events. At the present moment it is still more difficult as the world has not yet settled down to a peaceful life. The adjustment of area and prices of different agricultural commodities is very difficult to foretell. Another disturbing factor in forecasting the future prospects of the cotton industry of the world is the technological advancement made during the war. The production of staple fibre and rayon is, even at present equal to 27 per cent of world output of cotton. It is quite likely that in the very near future artificial fibres may be produced more cheaply and in much greater abundance. The supremacy of cotton in the world trade may thus be seriously challenged and King Cotton may after all be faced with a very serious rival.

As a normal consequence of the work so far done in India, future developments of the cotton industry in India may take place along four lines: (i) Increase in acreage under American cotton, (ii) improvement in yield, (iii) improvement in ginning outturn, and (iv) improvement in quality. These items will now be dealt with seriatim:

(i) *Increase in acreage under American cotton*: The area under American cotton has increased greatly during the last twenty years and, although the acreage figures of all varieties are not available yet the tendency towards bigger area can be seen from total production of these cottons as shown in Table III.

Table III

Production in thousands of bales

Description of cotton	Average 1922-27	1938-45	1943-44
Punjab and Sind American ...	264	1,202	1,476
Cambodia ...	147	194	235
Buri ...	...	28	80
Total American crop	411	1,424	1,791

Under the stress of economic factors operating during the war, when shipping and other difficulties made it impossible to export Indian cotton, especially the short-staple varieties, the area under American cotton has increased. With the resumption of normal trade relations and the consequent adjustment of prices, according to the law of supply and demand, it is quite likely that the area under American cotton in India, may show a slight decline. It will also be noted that as no new lands, at present lying barren, can now be brought under the plough, the area under American cotton in India has reached the saturation limit and in future, instead of

any increase there may be a slight reduction in the area.

(ii) *Improvement in yield* : All the Agricultural Departments in India and the Indian Central Cotton Committee are striving to breed higher yielding varieties. These efforts have been crowned with success as the figures given in Table IV will show.

Table IV

Average yield of Lint (lb. per acre)

Year	Average yield
1922-27	96
1927-32...	95
1932-37...	108
1937-38	99
1938-39...	103
1939-40...	109
1140-41	121
1941-42...	115
1942-43...	103
1943-44...	112

Another factor which is now coming into operation is the more extensive use of fertilizers. The present consumption of artificial plant food in India is infinitesimally small as compared to 12,468,000 tons used in the United States of America, during 1944. Movements are, however, afoot whereby the farmers in this country will be induced to use greater and greater quantities of artificial manures. The fertility level of the land will, then, go up and the yields will consequently improve. Thus, even with the same acreage, India will, in the near future, produce more cotton.

(iii) *Improvement in ginning outturn* : The cotton breeding programmes under-way in most of the provinces have in view, amongst other things, the production of varieties with higher ginning outturn. It has been estimated that an addition of 1 per cent ginning outturn is practically equal to an increase of about 3 per cent in yield, and the new varieties now being produced show a definite improvement in this character.

It was once feared that improvement in ginning outturn brings in its wake a deterioration in fibre length. This idea has now been largely abandoned and it has now been shown that these two characters can be combined in a fair degree. The new varieties, now being produced in India, possess longer fibre and higher ginning outturn than the present day commercial varieties.

(iv) *Improvement in quality* : This is the line of work, attention on which has been focussed since the early twenties of the present century. The improvement so far affected is depicted in Table V :

TABLE V

Production in thousands of bales of various type

Description of staple	1922-27	Average 1938-41	1943-44
Short Staple below $\frac{7}{8}$ in.)...	3,827	3,053	1,938
Medium and long staple ($\frac{7}{8}$ in. and above) ...	1,622	2,340	3,156
Total ...	5,449	5,393	5,094
Percentage of medium and long staple ...	30	43	62

The figures in Table V are extremely instructive. India, the second largest cotton producing country in the world, was content to hold on to the monopoly for the production of short staple cottons till the World War II. During this war, however, the economic life of the country was shattered and the piling stocks of short staple cottons rendered the cultivation of such cotton unremunerative. Hence there was a big increase in the area under medium and long staple varieties.

Another factor has also to be taken into consideration. The Indian mill industry uses a much bigger quantity of the medium and long staple cottons as compared to the short staple cotton and the deficit in the present production of the cottons of the former category is met with by imports. In 1943-44, India imported 188,118 bales from East Africa, 238,439 bales from Egypt and 82,466 from the Sudan. Efforts are now being directed in Sind, Punjab and Madras to produce long staple American cotton ($1\frac{1}{8}$ in. and above) and the prospects appear to be quite bright. It will be seen that there are very good prospects of producing cottons with a staple of $1\frac{1}{8}$ in. and above in the Punjab. When the new strains are finally tested, it is hoped to grow such cottons over about a million acres. Thus in the long run India will not only produce such cottons to satisfy the internal demand, but there may be an exportable surplus.

Laws will, however, have to be enacted whereby mixing in the ginneries of better sorts with those of poor quality, which is so much in vogue at present, will be banned. The seed-supply organization will have to be strengthened so that every farmer who wants to grow better quality cotton will be able to purchase seed of certified purity. All this work, it is hoped, will come in good time and India will be in a position to be counted amongst the countries of the world which produce good quality cotton.

This is, in short, the history, the present and the future prospects of the American cotton industry of India. From humble beginnings, great advancements have been made and the future prospects, artificial fibres permitting, are very bright.

—*Adapted from 'Indian Farming'*

GLEANINGS

Call to Graduates to Build New India

Pt. Ravishanker Shukla, the Prime Minister of C. P. and Berar, delivering his Convocation address to the Saugor University graduates, called upon them to be the custodians and sentinels of freedom and to pool their infinite potentialities of creative and constructive efforts in one great endeavour to build a new India, He said:-

"Huge tasks await you. This is an era of great regeneration. You have to clear the mud and silt left by hundred and fifty years of British rule. The days of political agitation and slogan-mongering are over. Ahead of you lies a period of all-sided reconstruction. Every inch of our cultivated land has to be made to yield more and more food for our rapidly growing and increasingly starving population. Every unit of energy that nature is capable of yielding has to be harnessed to the vital need of increasing production. Widespread illiteracy and ignorance have to be wiped out. You shall have to pool the infinite potentialities of your creative and constructive efforts in one great endeavour and build a New India. On the ruin of India that was, you have to build India that is to be. It will be an India for which many of her noble sons died with a defiant smile on their lips. It will be an India where there will be no islands of communities, no barriers of castes, no walls of languages, no separating gulfs of religions. Though fragmented in body, India's soul remains one. India of future will be united, strong and happy, an India of our heroes' dream, an India of our martyrs' dream, great, glorious and imperishable".

Objectives of Adult Education

Inaugurating the 5th All-India Educational Conference held at Rewa, Mr. K. G. Saiyidain, Educational Adviser to the Government of Bombay, said :—

sions" in June-July issue and the fare-well address to the trainees by Mr. Puranik. Really, only patriots can say so frankly when everything concerning Rural India is in the melting Pot. In Ajmer-Merwara also the Rural Development Department like that of in the United Provinces was abolished since February, 1948, inspite of all round cry, deputations, resolutions and representations to the Chief Commissioner and the Minister for Agriculture Government of India. This is a tragedy. In the United Provinces real practical work was being done by the Rural Development Department in every District but personal prejudices and power politics ultimately abolished this most useful organisation. I anticipate, the Central Government must be in the know of it. What is being published in Rural India is in good faith."

Another eminent worker in the cause of constructive nation-building in Dhrangadhra (Gujarat) who has devoted a life time in the service of the Villages, deplores the present inaction of the Government and stresses the necessity of starting a New Organisation in the country. His letter in purport reads:—

"While I read your well-worded editorial of June-July issue of 'Rural India' I thought, you were echoing exactly my impressions on the present ministries, of which, we hoped so much while they were not in office. I still remember those days in Pohri when all our nation-building plans were concluded with, 'the work can only be done when we have our National Government.'

"It is sad, however, that these cherished hopes could not be materialized and even earnest efforts could not be directed towards the realization of these hopes. This, however, should not disappoint sincere set of people though such people are in negligible number. Sincerity in a person is hardly being encouraged in these times. On the contrary I feel that it has been responsible for the sufferings of those who have it at all. *The cry for action has so far been in the wilderness. Let us then mean action and no more of cry.*

"I may make a suggestion here. You have by now toured most of the country and must have met about a dozen real and sincere workers for rural reconstruction. Why not get them all together at a place and decide after necessary deliberations the future programme in different parts of the country. Why not we may hope to create a nucleus with a scope of large scale constructive work at no distant future. The sincerity of this nucleus will naturally draw sincere workers to its fold and I am sure, there would be quite a large number of such workers in the country who would lend their active support to this new organisation when they see that the organisation has the reputation of sincerity of purpose and service motive. Such an organization should organize, guide and coordinate really useful rural reconstruction work all over India.

"As far as I know of you, I believe, you have to live to see this done in your life time. You are certainly not meant for Pohri Jagir as you several times made it clear to me when I was there. The time is ripe and nothing short of a dash and a great effort would bring you satisfaction for the achievement of your life's mission. To be worthy of a leader a man needs two essential qualities – sacrifice and sincerity. You have these both. Why not then make a real and earnest effort to provide leadership for those who need it?"

Constructive programme has been and is a sort of appendage attached to the apron strings of the Congress. It has never had an Independent Leadership or an Independent organisation. Now that a wave of frustration and depression seems to be overtaking the country, the necessity of an independent organisation, to which attention has been drawn by our Dhrangadhra worker, is both real and urgent. A careful perusal of the Constitution of this organisation published in these columns will, we have no doubt, provide helpful guidance and inspiration to all such workers who realize the necessity of forming themselves into an organisation.

It is not a matter of joy to us to set up one more organisation when there are already too many in the country and put further strain on the loyalties of people. But this course has been dictated by the extreme urgency of the situation, goes without saying. Since the object of the organisation is more humanitarian than political, it is earnestly hoped that this 'New Order' will commend itself to people of all sections and political persuasions in the country.

CONSTITUTION OF "THE ORDER OF ECONOMIC DEMOCRACY"

Name:- This organisation will be known as, 'The Order of Economic Democracy' or 'Arthik Janatantra Samaj'.

Object:- The object of the organisation is to increase the present national wealth of the country by four times so as to ensure an average standard of daily income of Re. 1/- per capita to every Indian citizen. The citizen should also be assured of the basic minimum needs of civilized life i. e. adequate and nutritious food, decent clothing, sanitary housing, education, health and means of communication.

Scope of Activities:- The present scope of activities of the organisation embraces the whole of India within the territory of the Indian Union. It will have its branches organised in all parts of the country in course of time.

Means:- The principles governing the activities of the Order of Economic Democracy are:- (1) Service Motive (2) Planned Economy and (3) Full Employment. A member is under disciplinary obligation to follow these principles in his life and personal conduct.

Membership:- The membership of the organisation is open to every man or woman of Indian nationality who has attained the age of 21, who agrees with the object and principles of the organisation and tries to pattern his or her life according to them. A member is required to fill in the prescribed form of the organisation.

Admission Fee:-On enlistment, a member will be charged an admission fee of Re.1/- in an urban and annas -/4/- in a rural area.

Qualifications for Membership:- A person desiring to be a member of this organisation should have faith in the constructive programme of nation-building. He should also be prepared to make physical and financial sacrifices to attain the object of the organisation.

For considerations of efficiency and greater utility of the organisation, the membership will be divided into four different classes:-

(1) People, who would be able to give their whole time for the establishment of the order of Economic Democracy, will be classed as first class members.

(2) Those, who would only be devoting one day in a week for the mission of Constructive Nation-building, will be classed as members number two.

(3) Those, who would give one month in a year, will belong to class three.

(4) Those, who would find it difficult to give their time and energy but would be willing to contribute 5% of their average monthly or yearly income by way of contribution to the funds of the organisation, will be placed in the class four.

Right of Voting:- Members, who have faithfully discharged their obligations to the organisation by paying their own quota of work or money contribution would alone be entitled to vote at the time of Annual election.

Election of Office Bearers-: Members who would have tried to live and act in accordance with the principles of Economic Democracy and who could give their full time to the work of the organisation should be given priority in the matter of elections to

"Education is, no doubt, a powerful telic force for reshaping the ideas of people but, if we rely only on the normal processes of formal education imparted to children and young men and women in schools and Colleges—and this education is really effective and well directed—it will take a very long time, at least one whole generation, before any appreciable results can be achieved. Obviously this offers a great and glorious opportunity to Adult Education.

"The most urgent task of Adult Education today, is not teaching people to read, write or to add to their knowledge or even to improve their general efficiency—important as all those objectives are—but to concentrate on their SOCIAL AND MORAL RE-EDUCATION, to rekindle reverence for life which all great religions have taught and to reassert the primacy of those moral and spiritual values which ultimately give meaning to life.

"What is important for us to remember is that this raising of the material and cultural level, this admittance into the domain of the 'good life' is not possible through the drab, dreary and often literally dark "adult centres" in which tired, ill-qualified and ill-paid (or unpaid) workers labour to teach the mysteries of the alphabet to reluctant adults brought there under duress! No, if the adult education movement is to play its part in the renaissance of national life, these centres must become dynamic SOCIAL centres, focussing the actual and potential cultural resources of the local community, making the members actively interested in their own improvement and providing an environment and an atmosphere in which that interest can be joyfully translated into co-operative and growing activity.

"We can also utilize at this stage, partly to win and retain their interest and partly to broaden their mental horizon, the various visual and auditory aids which Science has placed at our disposal, pictures, charts, diagrams, films, radio etc.

Thus if Adult Education is broadened to mean social education, it can make a vital contribution to the salvation of the country".

Tasks of India's Educational Experts

Inaugurating the 14th Session of the Central Advisory Board of Education on the 13th of January 1948, Pandit Jawaharlal Nehru, the Prime Minister of India, said that some of the urgent tasks before the educationists of India were the creation of a sense of discipline among the younger generation of the country, channelising its energies in healthy directions and devising ways and means of finding the right talent for various plans of reconstruction.

"The entire basis of education must be revolutionised. The present system might have been suited to the past situation but maintaining the status quo in the field of education under the present circumstances would do nothing but harm to the country. The state of mind created by the system of education was absolutely out-of-date and ineffective.

"India had lost five precious months in unconstructive activities. Big plans were prepared for the cultural, social and economic reconstruction of the country but unforeseen and unfortunate circumstances had diverted their attention from them.

"In the plans for the rebuilding of the nation education had an important place because that was the basis for all other activities.

"The rehabilitation of the refugees was at present, engaging the attention of the Government of India, but there, also, the question of education was not absent. The Advisory Board had to suggest arrangements for the education of a large number of young boys and girls whose education had been rudely terminated by the disturbances. The Government must resettle them in educational life.

"Another task before the Board, was to advise the Government on the implementation of reports like one from the Scientific Man Power Committee. For all proper planning it was necessary for the Government to know what talent it had at its disposal and how it must train its men to take up essential jobs."

THE RURAL INDIA

Vol. XI No. 7] AUGUST, 1948 [Whole No 114

"Salvation of India lies in Cottages"

—*Mahatma Gandhi.*

THE BIRTH OF THE ORDER OF ECONOMIC DEMOCRACY

On the evening of Saturday the 17th of July 1948 quietly and unostentatiously four people including the Editor of this Magazine signed the admission forms of the Madhya Bharat branch of the Order of Economic Democracy at Lashkar (Gwalior) and laid the organisational foundations of the latest conception of social and political reconstruction which promises economic swaraj to every Indian citizen on planned and scientific basis. Elsewhere, in these columns we are publishing the draft constitution of the order, and invite earnest attention of our readers and workers to come forward and lend their support to this New Organisation by having its branches established in all parts of the country. The All-India body too is in the process of formation and active cooperation of eminent leaders of constructive thought and learnings is invited to make this Great Move a success in the interest of giving scientific and ideological guidance to the country, which it badly needs at this critical juncture.

We have extensively reviewed the position of political parties with reference to their contribution to solve the most outstanding problems of the country in the January 1948 issue of 'Rural India' and have reiterated our conviction that the 'Order of Economic Democracy' is the most suitable organisation, which promises to meet the needs of the present situation. What we witness in the present confusion of parties is that they have failed to assign priority consideration to the essential needs of man and build their ideological approach to the problem on the twin foundations of increased national production and efficient State administration. The most amazing thing about the present situation is that there is very wide gulf between what the administrations say and what they actually do. This sort of inconsistency or contradiction between spoken word and action is bad enough even for the reputation of an individual, but it is simply disastrous, if it is so in the case of policies and actions of a national administration. While, therefore, all Government policies are framed on the basic consideration of uplift of the masses in rural areas, the agency of Rural Development Department, which was working for their betterment in different Provinces is being abolished everywhere during our national regime. And the pity is that nothing better or equally good is being offered to take its place.

In our last issue, we have editorially drawn attention of Central and Provincial Governments to do away with this sort of anomalous position and establish harmony between their professions and actual actions. What we actually find is that with all good intentions on the part of the Government, a process of destruction is clearly discernible in most aspects of national life and particularly in the sphere of nation-building. An extract of a letter from a devoted worker in the cause of rural reconstruction in Ajmer-Merwara is published below which speaks for itself:—

"I highly appreciate the views expressed in the 'Rural Study Tour and its impres-

LAST week I promised to give further reasons which contribute to the deterioration of the Congress. One of them is the habit of making statements and promises without any serious faith in them or any intention of working for them. This is an old fault, and has been common to almost all, from some of the top-rank leaders to the local lights.

Let me point out a few. With Gandhiji, working of the constructive programme was even more important than the political programme which, in those times, consisted mainly in running elections for legislative bodies, local boards and municipalities, and later on for getting positions on Congress committees. Both these programmes became dormant whenever a resistance movement was started, and Congressmen, whether of the political side or of the constructive side, all thronged into the jails. Inevitably, lull came over it after some time and those who were released in due course but before the release of the all-India leaders found themselves in a peculiar position. They did not know how to justify their existence during the period when the movement was neither withdrawn nor carried on. Generally, this was the time when all were unanimous in extolling the constructive programme of Gandhiji.

Unfortunately for Congressmen, the people often took them seriously. Constructive workers and their associations entertained the hope that when the Congress came to power the Gandhian constructive programme would find the place of honour in the economic reorganization of the country. Therefore, when the Congress Ministries were about to be formed, they built upon going ahead with the constructive programme.

Constructive Programme

But no sooner did the Congress begin to function again as a party organization, the constructive programme was forgotten and elections and appointments became the only activity. Those who had been preaching the Gandhian programme a few days before were now found expressing doubts about its practicability. Whether the programme was social or economic, the average Congress worker considered that he had no particular connection with the programme. It was the sphere of the constructive workers. Some of them were frank enough to say that they did not understand the constructive programme. Some of them said that it was the programme for those who had not the capacity to work in the political field, or rather, were too 'good' (which meant 'dull') for that field. When the political programme was in the full front, even the doctrine of non-violence became a doubtful proposition.

Disillusionment did not take long to come even in the 1937 regime. But optimism is never in want of finding an explanation for disappointment. They thought that the lukewarm implementation of the constructive programme in 1937 was due to insufficient attainment of power. When full Swaraj was attained, the policy would change. So when the Congress was installed at Delhi, there was again a revival of hopes. But it did not take long to be disillusioned again.

If the Congress had not declared any economic policies of its own, had not issued any manifestoes, or appointed committees to draw up programmes, or in doing so had made it quite clear that the Congress plan of economic and social reorganization must not be confused with the Gandhian programme, and had not created the constructive associations under its auspices, or even after taking power had expressly said that somehow or other they found themselves unable to put into force the programme which the Congress had declared from

public platforms, and that having regard to the realities of the situation they must make large modifications in its implementation; or even if they had said that it was doubtful whether the people, including the villagers themselves, were anxious for the village industries and other policies of the Gandhian programme, and that since there was no demand from the people for the constructive programme of the Gandhian type, they would not impose it upon the people, the people would not have expected what they do at present and felt disappointment or anger for not getting it. But they did not say even that. They did not and do not deny their faith in the constructive programme of de-centralization and the village industries and the *charkha*. But there is very little doing. With the declaration of faith unwithdrawn what people see being done is the launching of big schemes and sanctioning of big factories straightaway—even for vegetable *ghee* and textile mills,—while there is yet vagueness about regeneration of village agriculture and industries.

So too, in the policy of the Governments in regard to basic education, medium of education, the national language and the University teaching; the ordinary man is entirely forgotten. As the industrialist and the big industrial and city labour have predominated the economic policy, so the English-knowing professor and High School teacher, and the pedantic man of letters and communally or provincially minded politician practically dictate the educational and language policy. They do not wish to change their old habits of thinking through and speaking English (if not pro-English) or to imitate Sanskrit or Persian masters of a bygone age. So they declare that nothing can be done in the realm of education without English, or in the realm of provincial languages without classical Sanskrit, Arabic or Persian.

The attitude towards Hindustani, or whatever name you want to give to the all-India language, is as if it was not to be developed more than what was necessary for just dealing with or entertaining railway porters, shopkeepers and peasants. It was not expected to be the language in which laws could be written judgements could be delivered, carefully worded pronouncements could be made, science could be expressed and best prose and poetry could be created. Few are proud of Hindustani as such.

HYPOCRISY

The purpose of mentioning all this is that the actual practice differs widely from that laid down in various Congress resolutions year after year. This conduct amounts almost to hypocrisy. But I have not called it hypocrisy, because I feel that most people were not conscious of making statements which at the time of making them they knew to be unreal. I would say that they were taken and repeated lightheartedly, as pieces of rhetoric in a manner more resembling the reproduction of the speech of Brutus and Antonio from Shakespeare in college days at social gatherings, than genuine utterances of their own. The habit has persisted and even hardened ever since. Add to this caste, communal and provincial wrangles in which holders of responsible positions are also involved. The result is that several constructive workers have been losing faith in the Congress as such. They cling to the Congress out of a personal sense of respect and loyalty to some of the top-most leaders of the High Command, whom they revere more for their strong and sterling character, statesmanship and age than for their faith in the Congress programme. The same respect prevents them from expressing their disappointment and indignation in too frank a manner. But whether they frankly express it or not the fact remains that the faith in the

responsible positions. Failing such members, other members from classes second, third and fourth be given a chance. Election will be by the majority of votes.

Central Office:-The Central office of the organisation will, for the present, be located at the office of 'The Rural India', Ishwardas Mansions, Nana Chowk, Bombay, 7.

All India Executive:-The first all-India executive of the organisation would be constituted of Eleven first promoters of the order. In the event of vacancies occurring in their ranks, these will be filled in by the regular process of election. Five out of eleven will form quorum.

Practical Constructive Work:-This organisation, whether working in a rural or urban area, will have a selected area for practical experiment where all-sided development programme along scientific and planned lines would be carried out. Success of a branch organisation will be judged by all-sided development of this constructive nation-building experiment.

Finances:-In order to meet its financial obligations every branch will be free to collect its own funds. Besides the funds collected from the contributions of the members, grants and subsidies may be secured from Provincial and Local Administrations and donations may be collected from general public. Branch organisations are entitled to spend ¾th of their total collections on local activities, while they should remit ¼th of their collections to the District, Provincial and Central Head Quarters to help the financial needs of the organisation.

Propaganda & Public Education:- With a view to make the people understand the new conception and ideology of Economic Democracy this organisation will, from time to time, be publishing papers and periodicals and will adopt such other means of public education and propaganda as may be found suitable and helpful.

Political Aspect:- Establishment of Economic Democracy in India is the supreme objective of this organisation. Efficient administration and large-scale increase in national production are two other aims correlated with Economic Democracy which this organisation has set before itself. In the case of this organisation taking of political power will be a means to help the cause of the establishment of the order of Economic Democracy in the Indian Union.

Ordinary Meetings:- Meetings of local or regional bodies may be held once a month to transact routine work and to fix monthly programmes of activities. For disposing of matters of importance, special meeting may be called when necessary.

Annual Conferences:- Once a year, at a convenient time and place decided in advance by the Central Executive of the organisation an All-India Conference of this body will be called which will take stock of the progress of the Order during the year and will devise ways and means for its future growth and consolidation on an All-India basis.

Special Note:-A member of this organisation will not be free to accept the membership of any other political or communal organisation. Central Executive of the organisation reserves the right to slcaken this condition in the case of certain persons or in special exigencies.

Organising Secretary.

CONGRESS AND CONSTRUCTIVE PROGRAMME

By K. G. MASHRUWALA

NOTE:—Shri Mashruwala has editorially reviewed and analysed the causes of the present deterioration and weakening of hold of the Congress organisation in the columns of Harijan. He is as unhappy over the evil fate that has overtaken the Congress in its day of greatest triumph and power as any other ardent patriot and has offered his suggestions to purify this great national Institution.

His reference to the constructive programme and the insincere and hypocritical way it is being handled by the Congressmen confirms our own impression that the Congress organisation as such is largely composed of people, who are seekers of political power for personal advantage rather than of selfless workers who have dedicated themselves for the elevation and betterment of human society. The gulf that divides the professions and public announcements of the Congressmen and Congress Governments and their actual practice is very wide and it is no wonder if people everywhere are losing their faith in the capacity of our administrations to do something worthwhile in the field of constructive nation-building. It is only natural that failure of Congress administrations to promote constructive schemes of national development is breeding disappointment and indignation among people and they have started transferring their allegiance from the parent body to other political organisations. The weakening of the Congress and loss of people's faith in its capacity to do constructive good of the nation is very unfortunate at this critical period of our national freedom. It seems, tragic as it is, the evil consequences cannot be avoided in the face of the facts obtaining in the country unless the facts themselves are altered.

The father of the nation, Gandhiji himself, more than anybody else, clearly saw the rot that has set in the Congress, and left his will and legacy to disband the present organisation and start another one in its place with different ideology and programme. Shri Mashruwala's suggestions in essence follow the same line of advice which may wean Congressmen of their love of power and profit and rededicate themselves for selfless public service along constructive lines. It is very much to hope that his advice in the interest of purification and strengthening of organisation will be acceptable to the leaders of the Congress when the same coming from the father of the nation (Gandhiji himself) found them unprepared to accept it through sheer want of strength and enlightened conviction.

Strength, of course, cannot grow out of weakness. Nor can the process of purification be gone through in an organisation, if the people are not prepared to pay the price through self-sacrifice. It is very unfortunate for the Country that the present Congress has ceased to invoke nobler and higher responses as in days of yore. And, the consequences of sheltering weakness are inescapable whether we like them or not.–*Editor*.

Congress has weakened, and has created a sense in the minds of the people that after all Congressmen too are no better than politicians generally are all over the world—more interested in securing their seates in elections than in serving the people.

In this connection I am reminded of an incident which took place nearly thirty-two years ago. I happened to travel by the same train in which Lokamanya Tilak was travelling. I was in a compartment with an Irish passenger. Although it was almost midnight, people thronged on the platforms of every important station to greet the Lokamanya. The Irish soldier enquired of me the reason for the crowds and the noise. I told him who Lokamanya Tilak was and what his place was in Indian leadership. "All bosh" he said. "I know all these politicians. There are so many in my country. Not one of them should be believed in and taken seriously." I protested that it could not be be the case with Indian leaders. "Oh! you will know it when you are grown up enough", he said, "unless you too become a politician!"

MAHATMA GANDHI MEMORIAL ROADS

Speaking at the annual meeting of the Indian Roads and Transport Development Association, Mr. I. A. T. Shannon, President of the Indian Roads Congress, emphasised the importance of building Village Roads and linking villages with centres of civilization and culture to promote prosperity of the villages and said:-

"The manifold post-war plans of reconstruction, will fail in their objectives unless there is an adequate road system to enable their fruits to reach the large mass of the rural population. No scheme of health services will improve the health of the people generally unless the doctors and nurses can readily reach the rural population and unless the rural poulation can readily reach the centres of special treatment. No multiplicity of schools will raise the general level of education unless the school children of rural India can reach them quickly and safely. No extension of railway and river services will provide the needed flow of commodities unless the railway stations and river stations are served by an adequate system of feeder roads.

This country had been stifled by lack of funds and there was little sign at present that sufficient funds were being provided for the construction of the 15,000 miles of village roads recommended by the Chief Engineers' Conference held in Nagpur in 1943. Here, in the alleviation and improvement of the lot of the villager is a matter which lay close to the heart of Mahatma Gandhi and what could be a finer memorial to him than freeing of the villager from his isolation by the construction of a system of memorial village roads. I cannot think of any method of honouring his name that would bring more tangible and lasting benefits to the people who were his first care. With due deference I would ask the administrators of the great fund that is being formed to commemorate him to consider the suggestion that this fund, or a large proportion of it should be devoted to the welfare of the rural community through the construction of village roads".

SUGAR INDUSTRY IN INDIA

By: **Mahesh Chand** and **Vishnu Saran Agarwal**

SUGAR is not new to this country. India is the birth-place of sugarcane. We have used it for thousands of years in forms which are more nutritious and less injurious to the human system than white sugar. Gur, Khandsari and Boora are not known to have been produced in other countries. White sugar is much harmful yet an increasing percentage of our population is becoming addicted to it. Before the World War II it was estimated that 50-85% of white sugar was consumed in the urban areas. This is bad. Besides, a progressive white sugar industry means unemployment to those engaged in the production of gur, khandsari and *boora*. It is high time that the State does something to check this evil heritage of the western countries.

History

However, the white sugar industry (or merely the sugar industry) was developed after 1931 when protection was granted by the Government of India. The consumption of white sugar began to increase towards the end of the last century. Consequently more and more of it was imported.* This was not possible during the Great War. In a report submitted by Mr. Mckenna it was stressed that there was a great scope for this industry in this country, but little was done by the Government to establish it. After the Great War, the Government of India levied an import duty on sugar. Benefitting by it some small sugar factories were established. In 1929 there were 38 factories producing 1.1 lakh tons of white sugar and khandsari, which was about one-tenth of our consumption.

Due to the Sugar Committee of the Imperial (now Indian) Council of Agricultural Research, a Tariff Board was appointed in 1930. Upon its report the Government of India levied a protective duty of Rs. 7-4 per hundredweight on imported sugar. At that time we had 49 factories (including 17 refineries) producing 29% of the sugar consumed in India. Thereafter the industry progressed very rapidly. In 1936-37 we had 137 factories and 9 refineries producing 98% of the sugar consumed by us. The refineries declined because they could not compete in cost with the sugar factories. The total consumption of sugar in that year was 11.5 lakh tons i.e., slightly more than that (11.2 lakh tons) of 1931.

Instead of continuously increasing, the production of sugar began to fluctuate after 1936-37. The maximum production (12.4 lakhs tons) was done in 1939-40 by 145 factories. Though in 1943-44, 151 factories produced 12.2 lakh tons of sugar, it has since been declining. In 1946-47 only 9.3 lakh tons of sugar were produced by 141 factories employing 1.2 lakh workers. It has increased to 10¼ lakh tons during 1947-48, with only 134 factories working. The per capita consumption of sugar was maximum in 1936-37 (7.3 lbs. per head per year). In 1945-46 it was only about 5.5 lbs. per capita. Incidentally it may be mentioned that during the same period the per capita consumption of gur decreased from 26.7 lbs. to 24 lbs.

* It is interesting to note that in the first half of the 19th century, India exported sugar to England. It was only after 1846 when England took action to stop the flow and in fact to reverse it. A demand for white sugar was created which has led today to a large and growing consumption of sugar at high cost and injury to the human system.

The import of sugar decreased sharply from 3.2 lakh tons in 1932-33 to a few tons in 1943-44 and to zero in 1945-46. Instead India has been building up a small export trade with the neighbouring countries. This is important from political considerations. These countries can even be our potential future customers of sugar. During recent years our exports have been about 15-18 thousand tons per year. It is estimated that we can sell even 70,000 tons of sugar in the export markets.

About half of the sugarcane produced in India is used to produce gur, one fourth used for chewing, khandsari etc., and only one fourth is used for manufacturing sugar. The pre-dominance of gur is partly due to economic considerations and partly due to the traditional choice. But sugar is more important now than the latter due to ignorance and the weakness to copy the urban people. From a maund of sugarcane, the quantity of gur to be produced is roughly double than that of sugar. Besides, the money cost per maund of sugarcane is less in the case of gur than that of sugar.

Location

Sugar is mainly produced in U. P. and Bihar. In 1947-48, out of 134 working factories, the two provinces had 65 and 29 factories, respectively which together produced 7.5 lakh tons i.e. more than 70% of the sugar produced in India. Next in importance are Bombay and Madras. These two provinces have certain definite advantages. The yield of sugar per acre is 2½ times that in U. P. and Bihar. The crushing season in Bombay is much longer than in U. P. and Bihar. Yet the sugar industry has not been more developed in South India. Four reasons may be mentioned. One, there is a wide range of more paying cash-crops like groundnut, cotton, chillies, tobacco and plantains. Two, an increase in sugarcane cultivation would mean a decrease in rice-cultivation, and rice is a staple food there. Three, there is a lack of compact blocks so that cane shall have to be secured from long distance, which will mean a loss of juice through evaporation. Four, the greater yield is due to heavy manuring and better irrigation, both of which mean a larger cost of production. Similarly, Punjab has unsuitable climate including frost, and Bengal has more valuable crops in jute and paddy. Mysore is, however, suitable for a better sugarcane-crop and has bright future.

Seventy percent of the cost of production of sugar is due to the price paid for sugarcane. Hence, the existence of compact areas supplying cane and of transport facilities for carrying the cane to the factory has located the factories in U. P. and Bihar. Yet another factor is the cost of distribution (i.e. transport) to the market. It is due to the high cost of distribution that factories are being started slowly all over the country. There is a world shortage of sugar and it is likely to remain so for some years. There is, therefore, scope for the export of sugar. This factor should lead to the establishment of factories in coastal regions.

Although more than ninety percent of area is already under improved varieties of sugarcane, the yield per acre has not increased much. It is still about 15 tons per acre as compared with 21 tons in Australia, 28 tons in Phillipine, 30 tons in Egypt and 56 tons in Java. The reason lies in the lack of cheap manure and cheap irrigation. The various multi-purpose river-projects, such as the Rihand Dam in U. P. and the Damodar Project in Bihar should mean more water, and more electricity to produce cheap manure. Then the sugar industry would be more widely distributed. Since the transport of sugarcane over long distances means a loss of juice, the juice may be locally converted into gur, which may then be supplied to producers

of *khandsari*, *boora* and sugar. But this method has proved more costly and so the production of this sugar has decreased from 80,000 tons in 1932-33 to 4000 tons in 1947-48.

In U.P. sugar is mainly produced in the Gorakhpur, Fyzabad and Lucknow Divisions, as also in the Western U.P. comprising the Rohilkhand and the Meerut Divisions. The development in Western U.P. has been due to the tubewells. After the completion of the Rihand Dam near Mirzapur, greater irrigation facilities should lead to more sugar production in the Allahabad and the Banaras Divisions. The Panel Committee on Sugar recommended the establishment of 15 new factories but said that no new unit should be started in U.P. and Bihar. The Government of India wisely decided not to accept the latter recommendation.

Incidentally it may be mentioned that out of 172 mills only 10 are located in Pakistan. The division of the country has little effect on the sugar industry in India.

Size

The distribution of the sugar mills by size in the different provinces of the Indian Union in 1946-47 was as shown below :—

Size (in tons)	U.P.	Bihar	Madras	Bombay	West Bengal	Orissa	East Punjab	Indian States
50-249	2	1	6	—	1	2	—	3
250-449	3	1	2	3	—	—	1	5
450-649	4	1	2	1	1	—	—	6
650-849	26	11	—	3	1	—	—	3
850-1049	16	9	1	1	—	—	—	1
1050-1249	5	3	—	2	—	—	—	2
1250 & over	15	6	1	—	—	—	—	3
Total	71	32	12	10	3	2	1	23

The Panel Committee on sugar recommended that factories below 250 tons crushing capacity should not be allowed to expand. This involves half of the mills in Madras, all the mills in Orissa, 3 in Indian States and a few mills in Bengal, Bihar and U.P. The Panel Committee seems to prefer a capacity of 800 tons. Most of the mills in Bombay, Madras, and the Indian States are below this size. Between U.P. and Bihar, though U.P. has a greater percentage of biggest factories, the general size of mills is greater in Bihar. In general the size of factories is greater in Northern India and lower in Southern India. In other words it is greater for factories supplying distant markets than those which cater for local markets. The industrialists are expanding the size of the factories, but the rate is slower for factories outside U. P. and Bihar.

The main factors which have affected the size of the sugar factories are three :—

1. Quantity of cane available for milling.
2. Transport facilities.
3. Access to markets.

The smaller supply of cane is the cause of the small size of factories in Madras, Bombay, Punjab and Bengal.

So far as foreign producers are concerned, Indian sugar factories compare unfavourably both with regard to size and the cost of production.

Efficiency

The efficiency of the industry depends mainly on the following three factors:—

1. The manufacturing costs.
2. The utilisation of by-products.
3. The raw material—its quality, duration of supply, and cost.

Machinery

Between 1932-46 India imported sugar machinery valued at Rs. 12 crores. It is difficult to import machinery now. We require machinery for replacing old ones as also for the new factories. According to the Panel Committee most of the machinery can be manufactured locally and it is essential that this be organised properly without delay. However, there is sufficient scope for economy in fuel if the boilers and the furnaces be properly remodelled. An improvement in the cane-crushing machinery and a proper remodelling of the other machines is also possible. There is sufficient scope for progress in the chemical and the engineering sections of the factories.

Bagasse and Press Mud

The main by-products of the industry are bagasse, which is left over after removal of juice, press-mud and molasses. The bagasse is usually used as fuel in the factory itself. As already mentioned, there is scope for economy in respect of fuel-burning. The surplus bagasse has been found useful in the manufacture of insulated press-boards, paper and straw boards, as also for production of rayon and plastics. Similarly, the press-mud can be utilised in producing fertilisers, wax, dues, activated carbon and distemper. But science and research have to be further mobilised for better exploitation of the possibility of their industrial uses.

Molasses

On an average from 100 maunds of cane about 3.6 maunds of molasses are obtained. To some extent it has been used in the manufacture of methylated spirit, curing of tobacco, burning as fuel, as manure and for the production of power alcohol. The greater portion of it is thrown away as waste. With proper scientific research, it can be used for the production of stockfeed, edible syrup, surfacing roads, acetic acids, chemical solvents etc. But three uses of molasses are most important. India lacks in petrol. During the World War II, motor-cars had to be run on coal-gas. It is possible to use molasses to produce alcohol which can be mixed with petrol in the ratio 1:4. Thus the surplus of 4.5 lakh tons of molasses can yield about 22 million gallons of power-alcohol. The U.P. and Bihar Governments are promoting the production of power-alcohol. In U. P. 5 million gallons of power alcohol are already being produced and construction work is near completion for another 2 million gallons.

The second important use is in the form of manure for reclaiming *usar* land. Dr. N. R. Dhar of the Allahabad University has conclusively proved its utility for this purpose, but it has not received the earnest attention of the Government as yet.

The third important suggestion could be that instead of producing white sugar, brown sugar and gur may be produced on the factory basis. The production of gur shall not result in the yield of molasses. Besides, it shall mean more recovery of sugar for human consumption. In addition, it may be noted, that about 2½% of gur would be in the form of glucose, which is directly assimilated by the human system, but which is missing in white sugar. On the factory basis, 100 maunds of cane would yield 13.83 maunds of our in place of about 10 maunds of white sugar.

Raw Material

The raw material, namely, sugarcane is by far the most important factor which determines the efficiency of the sugar factories. Although much has been done to improve the quality of cane, both with regard to the sugar-content of the cane as well as the yield per acre, India is far behind countries like Java, Hawaii and Formosa. The cultivator is more attentive to the high yielding varieties rather than to the high-sugar varieties. The reason is that the price fixed for cane by the government is by weight and not by the sugar-content. This is so because with thousands of small cultivator-suppliers it is very difficult to test the sucrose-content of every cart.

Zoning

If the industrialists may co-operate and take real interest in the welfare of the peasants it should be possible to mark out zones for each factory and to make the quality of cane uniform in that zone. The price of cane may then be fixed with reference to the quality of the cane in that zone. There may be different prices for the quality of cane in the different zones.

Our aim should be to increase the yield of sugar (or gur) per acre of cane. In this connection we may benefit by the experience of Hawaii and Queensland. The former concentrated on greater yield per acre with cane of moderate sugar-content: the latter on the varieties with greater sugar-content. The progress made by Hawaii was far greater than that by Queensland. So, and in view of the prevalent system of paying the price by weight, India should also go in for varieties which bring greater yield.

The average yield of cane per acre in India is about 15 tons, and according to the estimates of Dr. Burns it can be easily increased to 30-35 tons.* Two important factors in this connection are irrigation facilities and manure supplies, which must be solved. It is because these two problems have not been solved that though over 90% of the area is under improved varieties of cane, the yield per acre has not increased appreciably.

The problem of variety is linked with the question of the duration of supplies and crushing. If we want to make the best use of the crushing capacity of the factories, the supplies of cane should not exceed the capacity, otherwise, the excess supply of cane has to be stored and during storage the cane juice dries up rapidly, as also there is deterioration of quality. Hence it is necessary to grow the early maturing and late maturing varieties. Unfortunately the early maturing varieties yield less cane per acre and the cultivators are therefore less eager to grow it. In order to solve the problem the price for the early supplies should preferably be fixed higher than for the late-varieties. The latter varieties suffer more from cane-diseases and it is necessary to find, popularise and distribute disease resistant varieties.

Research

Since 1944, the research work with regard to sugarcane has been taken over by the newly established Indian Central sugarcane Committee. In order to finance its work the Government of India gave Rs. 1.25 crores in 1945. In 1934, in order to increase its income the Government of India had levied an excise tax on the sugar produced in India. Out of the amount so collected every year, the Government now

* In an Experiment in Deccan as much as 103 tons of cane per acre have been produced.

sets aside a sum at the rate of four annas per hundredweight of sugar i. e. about Rs. 50 lakhs yearly for expenditure by the Indian Central Sugarcane Committee.

U. P. already had a college of sugar technology for training candidates. Now it has been taken over by the Central Sugarcane Research-cum-Technological Institute which has been established near Lucknow with a central grant of Rs. 50 lakhs, for both research and education. This is due to the efforts of the Indian Central Sugarcane Committee, which is now coordinating the activities of the various sugarcane research stations all over India. Besides, the Committee is financing approved development work in various provinces. The emphasis of the Committee is on irrigation, manure, disease-free seeds, suitable implements and the provision of sufficient watch and ward service for the protection of crop against pests and diseases. It must be emphasized that it is also essential to organise demonstration farms in the cane areas. It should be possible for the provincial cane-development personnel and the cane development societies to rise to the occasion and organise such farms. These farms shall also be the centres for the production and distribution of better seeds.

Profits

Inspite of the manifold competitive drawbacks of the sugar industry, on account of the protection afforded to it by the Government of India, the industrialists have earned good profits throughout. It is, however, regrettable that they have not cooperated to bring together fuller statistical data so as to analyse the efficiency at various stages. They have ever stood for protection but seldom for better treatment to the labourers and to the consumers.

Labour

So far as the labourers are concerned, the wages bill for unskilled workers, who are predominant in the industry, and number about 1.2 lakhs, amounts to about Rs. 90 lakhs i. e., about one-fiftieth of the total cost of production. The wages received by the workers has been undesirably low. In U. P. the Labour Enquiry Committee has recommended increased wages which work out at about Re. 1 daily for unskilled workers and upto Rs. 2 daily for skilled hands. Besides, they have recommended the grant of a bonus of 2 days' wages for every 1% dividend declared by a company. Assuming a dividend of 12%, and that about three-fourth of the workers earn between 8 to 12 annas daily, the increase in the cost of production on account of the recommendations should be only one percent. Even if the increase be met only from profits, the reduction in dividend rates should be two or three percent.

According to the survey made by the Rege Committee, 64-86 5% of the workers are indebted on the average for 140-200 rupees, mainly on account of marriages and domestic needs. In Meerut, Gorakhpur and Darbhanga 21.8%, 14.3% and 10.6% of the debt was incurred to purchase land and cattle.

About two thirds of the labour force changes year after year and only about ten percent can be said to be permanent. Even so, the housing facilities are deplorable. The Rege Committee made sample surveys at Meerut, Gorakhpur, Champaran, Darbhanga, Ahmednagar and Madras. Most of the dwellings had one room each. It was more true in the case of the dwellings provided by the employers. On the average there are more people per room in the private dwellings. About three fourth of the occupants live in one-room dwellings and the average number of persons per room is 4 to 5, which is totally undesirable from considerations of

health and privacy. The majority of the dwellings have no kitchen facilities, nor verandahs and bathrooms. Except to a certain extent in the case of employers' dwellings, there is no provision for such amenities as electricity, water-supply, satisfactory drainage and ventilation.

Even inside the mills the sanitary conditions leave much to be desired. Though the lighting and ventilation arrangements are satisfactory, the mills, particularly those in U.P. and Bihar, are characterised by a stinking smell on account of wrong and inadequate storage and disposal of molasses, press-mud and polluted water. The situation can be partly remedied by greater and more sincere factory-inspection.

It may be added that atleast in U.P. the molasses of all factories is being sold by the Indian Sugar Syndicate on behalf of the Government, which pays for all molasses thus sold at a fixed price of 4 as. 9 p. per maund. Part of the molasses is supplied to distilleries at 3½ as. per maund i. e. at a loss but the loss is more than covered from the sale of the balance of the molasses. The profit made is to be spent by the Government for a housing fund for the workers, or for being spent on the welfare of the workers or the industry.

Consumers

Lastly, we must consider whether the consumer is getting a fair deal. We have already said that white sugar is more injurious than brown sugar, and gur. Even if the consumer gets sugar at three annas per seer, at which rate he purchased it before the World War II. he will be paying more through the doctor's bill. The consumer ought to be taught the qualities of sugar, gur and boora. Besides, at present the wholesale price of sugar in America is about eight annas a seer and in Cuba about six annas per seer. In India it is about twelve annas per seer. The producer does not try to reduce the manufacturing cost and make a better use of the by-products. He pleads repeatedly for a reduction in the cost of cultivation of cane and in its absence asks for further protection. It is high time that he should be told that unless he and others come together and try to solve the problem, the protection cannot be fully granted. For about eighteen years the industry has been progressing under protection. In the interest of the consumer, it now appears desirable to reduce the protective duty from 1949. That is the only way of ridding the Indian sugar industrialists of the protection-clutches and securing a better deal for the consumers.



VILLAGE ROADS

A serviceable road is a necessary factor in village improvement. Creteways or concrete wheel tracks consisting of two parallel strips of concrete provide the villager with the most economical, weather-proof link with the nearest town or market-place. Creteways speed up the transport of commodities while reducing maintenance costs to an absolute minimum. In addition, creteways permit the use of bicycles, ensuring speedy medical relief, post and bank facilities; for children, schools are within easy reach

Creteway design lends itself to a certain extent for progressive improvements to roads. During the first stage a set of tracks can be laid on one side of the road carrying the greater intensity of traffic to which another set of tracks may be added on the other side at a later date when traffic increases and funds permit

In the first stage an approaching vehicle can very easily get off the creteway to make room for one having the right of way

For further information write to the Concrete Association of India, 1, Queen's Road, Bombay

FREE SERVICE CAR

THE CEMENT MARKETING CO. OF INDIA, LTD.

THE GANDHI NATIONAL MEMORIAL FUND

By J. C. KUMARAPPA

We are all members of a society living in groups as in a big family where the family lasts for all time while the individual members may be living for a while and then passing away. Not deterred by the death of individuals the family continues. So what we do for the well being of the whole family is more lasting than what we do for a mere living individual.

Gandhiji passed away on the 30th of January last. His body has gone away from us but the permanent part of his life and work we want to perpetuate. For this purpose the Gandhi National Memorial Fund has been started. The purpose of this Fund is to collect money only to perpetuate the ideals for which Gandhiji had been working.

The work that Gandhiji has done is not merely for the poor people of India but also for the down trodden of the whole world. Hence whatever feeble effort we may make in our own little corner we must remember that it is a part of the work that is going on not only at our place but all over the world. Because of that everybody would want to do not only what they are doing by themselves but also would want to associate themselves with the work that others are undertaking.

One way of doing this is through a common organisation through which we may contribute our services, thoughts and money. The Gandhi Memorial Fund is started for this purpose of facilitating many people to associate themselves in bringing about a social order of human families of the type that Gandhiji envisaged. This work can be undertaken in three ways.

In the first place we give our whole attention and time to the work representing as it were Gandhian ideals in our day to day life and propagating them to others.

In the second we mainly lead a life of our own and do what little we can in our personal activities religiously and strictly, never going against the Gandhian ideals.

In the third form we ourselves may not be able to do very much but we contribute towards it in money and in kind, if necessary, so that others may be able to do that work.

A word of explanation may be given on each of these three methods of contribution. Then we can choose what way we can contribute in either of the three ways, all of them or separately.

The one thing that Gandhiji had been working for is propagation of the ideal of truth and non-violence. This comes in in all our ways of living and in every day dealings that we have with our fellow beings. For instance, in the Gram Udyog Sangh our work is mainly to see that Truth and Non-violence is brought into the economic life. For example, if you go and buy toddy and drink it, then you are probably bringing in great distress to your family and therefore toddy drinking is against this principle. It is easily understood that a drunkard commits violence towards his family. But people do not understand that the same type of violence is committed by us when we go to the rice mills or to the flour mills. Paddy as it comes from the earth has got much of nutritive elements in it, but when it is passed through a mill and polished all the nutritive elements are removed and only the chaff is left out for our consumption. Therefore by using milled rice we are harming the health of our children. Similarly we give less nutritive food to our children if we feed them on milled flour, etc., and to that extent we are doing violence to our children, just as the drunkard. Similarly sugar-cane juice as it is got out of the cane is good food but when we make sugar out of it everything else is removed except the heat-giving part.

That is why Gur-making, paddy-husking and flour-grinding are given the first place in our Udyog Bhavan, because of their importance in our economic life to bring non-violence and truth into our lives.

Now you will see how, just as the drunkard throws away all the resources of the family for something which puts his mind out of gear, we deprive the family of all the nutritive elements of food for something that satisfies the palate or a misguided aesthetic sense.

So it is that our Sangh also is working towards non-violence and when we propagate the idea of self sufficiency, it also goes to propagate Gandhiji's ideal of Ahimsa.

Then again we say we must not use foreign goods or mill-made goods. The mill gathers the riches from the poor and enriches the Capitalists. That is why we insist on wearing Khadi. When we spin and make our own Khadi our resources remain with us and in the case of mill cloth we give our resources to the mill owner just as the drunkard gives away his resources. So we see in how many ways we are supporting violence. If we do not want to support violence we must not buy foreign articles or the mill made goods. That is the way in which we can bring about Gandhian ideals into our every day life. Everybody can work to bring the Gandhian ideals of Ahimsa and Satya in our every day life.

These are not mere metaphysical subjects for meditation and contemplation but realities facing us every day.

In the first method those of us who are giving our whole life to propagate this mode of life with all our strength, intelligence and other resources are contributing them to perpetuate Gandhiji's memory.

Some of us may not be in a position to give our whole life and thought for this work, but we may be able to do that partially, that is in our own personal life. At least at home we follow these principles. In so far as we are doing this we also, to a certain extent, are propagating non-violence and truth.

While we are doing this we would also have a share in the first part of the work, in the work that is being done by people who have dedicated their lives wholly for this purpose. People who have dedicated their lives for the work have to be supported by a portion of our earnings. It is for this purpose the Gandhi National Memorial Fund is formed, to collect money from those people who would like to contribute something to propagate Gandhian ideals.

They have suggested that each person should contribute at least ten days' income in the year to this fund. Those who want to associate themselves to a greater extent can do, but this is the least.

Ordinarily when a big person passes away, a memorial, generally a material memorial, is built for such a person. For Gandhiji we want to put up a memorial which will be propagating the principles for which he stood.

By contributing to the fund we are not giving charity but are helping to build up a world of non-violence and truth. In this noble venture our money will be used. We hope our readers would want to cooperate in this just as zealously and eagerly as they would want to remove the evil from the family of a drunkard and with the same eagerness do some meritorious work not only for India but for the world as a whole.

And some of us may not be having incomes out of which we can give the money. Then we may contribute in self-spun yarn. For this purpose 79 hanks can be given as a unit. If you do not want to have an inroad on your money resources this is the alternative. Such yarn will be exchanged then for money by the Charkha Sangh.

These are the three ways of contributing to this memorial and it is much more important that we ourselves bring the great principles of Gandhiji in our everyday life and set up an example to our neighbours. In doing so we shall all be helping in ushering in a society based on non-violence and truth. This is a noble enough ideal to deserve our all out effort.

AGRICULTURAL ECONOMICS AND AGRICULTURAL POLICY IN INDIA

By R. S. SHIWALKAR

IN the process of evolution, past experience has been responsible for the advancement of mankind from one stage to the other. In the very early primitive stage of man he was hardly required to do any other job except to get food for himself and later on for his family. With the progress in civilization and growth of population, wants have increased and several complexities have developed to get the chief wants of food, clothes and shelter satisfied. In the complex composition of the ways of life, one is required to work under unnatural conditions, thereby making medical aid a necessity of life. Similarly along with the obliteration of simplicity in the ways of life, one has to be equipped with the knowledge of times through the knowledge of letters. Also as a man does not live by bread alone, development of a person, his character and culture, which, to a great extent, depends upon education, is also very vital in one's life. So the essentials of life under the existing social and economic order of things are food, clothes, shelter, medical aid and facilities to educate one's children. Every society, every nation and every government which undertakes to pool and organize all its resources in such a way that all the persons making the society or the nation are offered all the essentials of life to the largest degree possible at minimun of efforts can be considered to have served the society or the nation well. Applying this test to Agricultural India, it is proposed to examine how matters stand in this respect with special reference to the agricultural policy in regard to agricultural research pursued in India.

Though we have a Government of our own for the last one year and more the national Government hardly got any respite or occasion to reorganize the agricultural policy completely, though, of course, some modifications have been introduced to secure immediate benefits. An opportunity is, therefore, seized to point out how agricultural policy adopted by the last government did not bear much fruit and failed to achieve the desired object of improvement in agriculture and the promotion of welfare and prosperity of the rural population. It is not intended to go into the details of the agricultural policy in India during pre-British and British periods. Suffice it to say that there is no record of any definite policy for some time and the agricultural policy adopted during the last half a century or so completely lacks in coordination. An ideal agricultural policy would be one to introduce scientifically approved improved methods of agriculture directly benefiting the masses in rural areas. The pioneers in deciding agricultural policy in India, I am constrained to point out, have either for Political reasons wilfully or otherwise totally ignored the fact that the improved methods of agriculture were to be introduced freely among the masses in rural areas. Consequently most of the agricultural research achievements and advocated improvements have remained confined only to research laboratories, their reports, periodicals and journals and such other publications.

Unlike most forms of industry, agriculture is a partnership between man and nature. There are several physical factors which impose limitation upon the venture, e.g., rainfall, temperature, soil, organisms, etc. Success in Agriculture, therefore, will depend

upon how best a man can ameliorate the natural deficiencies and control the natural adversities together with how best he can organize himself in the conduct of his ordinary business of life as related to land. The whole problem of improvement in agriculture and the promotion of welfare and prosperity of the rural population can be divided into the following aspects.

(a) The technical aspect which includes the discovery of new truths about the laws of the nature and the application of the same to agriculture, i.e., the production of plants and animals.

(b) Agricultural Economics which includes man's actions in the ordinary business of life as related to the land. This aspect takes into account the adjustment of various factors of agricultural production in such a way as to produce the largest profit per unit of production, e.g., land, labour, capital, land tenures, marketing, credit institutions, legislation, etc.

(c) Rural Sociology which takes into account how best farmers can organise their own as well as the common resources of the people as a whole for the purpose of promoting national welfare.

A peep into the agricultural research policy adopted by the Government of India so far will well illustrate as to what has been done for the improvement of agriculture and promotion of welfare and prosperity in rural areas. No account is available to show the conditions of agriculture and agricultural research in the pre-British period. There is little evidence to show any organized effort for research in agriculture in this period. In the early periods of British rule also nothing was done in this direction. Frequent crop-failures and consequent famines at the end of the last century, however, made the rulers feel that something should be done to improve Indian agriculture. Several committees and Commissions were appointed to investigate into the matter and make recommendations for improvement of the same. Important among them were the Famine Commissions of 1880, 1898 and 1901; Irrigation Commission of 1903; Commission on Cooperation of 1915 and the Commission on Agriculture of 1926. All these commissions enquired into their terms of references in detail and submitted their reports containing very valuable suggestions and recommendations on vital points. But no action was taken till Lord Curzon's Government made a start early in the beginning of this century by establishing an Agricultural Research Institute and an Experimental Farm at Pusa. This was the beginning of organized research in India in about the year 1903. Later on by about 1905 research in agriculture was taken up by the different Provincial Governments also. Agricultural Research Institutes were thus established both at the Centre as well as in the Provinces. Experts in Agricultural Chemistry, Entomology, Mycology, etc, were imported from Great Britain and other foreign countries. Investigations and inventions in the various branches of Agricultural Science commenced then, are being conducted for all this period of about half a century. Very useful and valuable contribution to knowledge made by many individuals both Indian and Non Indian and institutions in their spheres of activities deserves appreciation.

All this work was started and has been undertaken with the object of improving agriculture and to promote welfare and prosperity in the rural areas of the country. Frequently of crop-failures and famines was expected to be gradually reduced and subsequently removed. But the Bengal tragedy of 1943 and the present country-wide insecure food position of India clearly indicate that the efforts made to combat famines by improving agricultural production have either been inadequate and/or not properly organized.

The main reason for this failure is that the real problem has not been considered in all its bearings. Research policy of the Government brings forth that agricultural efficiency has been attributed to technological improvement only. And a good deal has been done to make head-way in this direction. But what are research programmes and subsequent technological achievements meant for? A change in the trend of thought indicated above is necessary, as technical improvements alone are good for nothing unless the results of such researches are made applicable over the largest possible area benefiting the maximum number of people. It is here that the agricultural policy particularly in respect of agricultural researches lacks in coordinated efforts and action. Workers and thinkers are agreed that agriculture is characterised by a high degree of economic uncertainty as it is a partnership between man and nature. Failure to recognise this fact has led to the narrow outlook and policy of the Government in concentrating energies upon technological improvements alone. Application of scientific achievements so as to benefit masses in rural areas has been systematically ignored.

As a matter of fact agricultural efficiency can be determined as much by technical perfection as by social, economic and legal status of the tiller of the soil. Omission of the most complex problems like land tenures in India from the terms of reference before the Royal Commission on Agriculture and omission of the study of "Agricultural Economics" and investigations into the rural problems from research activities are direct indications regarding non-recognition of or careful connivance at these problems of vital importance.

Several illustrations can be cited and instances quoted to bring home the importance of the study of and investigations into innumerable problems of rural economics and sociology which call for an urgent attention to develop agriculture and the agricultural population in Indian villages. The much talked of mechanical cultivation, control of many insect pests and plant diseases are practically useless on the existing fragments of land situated in a disorderly manner all throughout the village areas. They need carefully prepared consolidated blocks of land and cooperative action on the part of the cultivators. There are problems of other nature also which come in the way of promotion of prosperity in villages. In the course of his enquiries to study some of the economic problems of two separate villages in the Central Provinces the author has come across divergent conditions. In one village, occupations other than agriculture like brick laying, cart hire etc., being possible, cultivation is being treated as a secondary occupation keeping the villagers engaged from the middle of June to the end of October, the period being the slack season for other occupations noted above. This is, thus, an instance to show how improvement in agriculture—a matter of national importance is hampered by subsidiary occupations, otherwise considered to be essential for the development of agriculture in India. This is exactly what the author noticed in the other village he has surveyed. Cultivation and allied occupations together with two important Forest Industries do not offer enough opportunity to keep all the village working population fully engaged for all the year. There are varying degrees of employment in different periods of the year, under-employment to the extent of 45 percent being forced upon the workers for a period of about five months from January to June. In this way there is an ardent craving for some subsidiary occupations in villages of this type, whereas in the case of villages of the former type subsidiary occupations have done more harm than good to the cause of agriculture and agricultural development.

The foregoing discussion in brief brings forth that Indian agriculture at present does not suffer as much from technical handicaps as it does on account of certain economic factors. Besides, in the interest of national welfare, which lies in the welfare of rural population, due attention to the problems of "Agricultural Economics" and Rural Sociology has to be paid as they occupy a very important place in the development of agriculture in general. Scattered attempts are being made by certain individuals and private institutions to conduct experiments and to study the problems of agricultural economics, e.g. The Adarsh Seva Sangh, the Indian Society of Agricultural Economics, the Gokhle Institute of Politics and Economics, the All India Village Industries Association, etc. However, real improvement in agriculture and promotion of welfare and prosperity in rural India is not possible unless the Government include research in agricultural economics in their agricultural research programme. A speedy change in outlook and reorganization of the agricultural policy by our national Government so that technological improvements are well co-ordinated with the economic and social and legal status of the man behind the plough with due flexibility to make one adaptable to the progress in the other, are anxiously longed for to ameliorate the masses in rural areas.

ABOLITION OF THE ZAMINDARI SYSTEM IN INDIA

by SHARAD CHANDRA MERH, M.A.

THE matter of abolishing the zamindari system in India has for sometime been seriously engaging the attention of the country, especially its legislators, and it will be in the public interest if the question is fully discussed and its implications properly understood before the final enactment is put on the Statute Book of free India. The abolition, if effected, will no doubt be great revolutionary step in the field of land reform and as happens in almost all revolutionary movements, one will have to face some hysteria and appeals to sentiment from the supporters of the losing cause. But the thing has to be studied calmly in the national setting, and if it is found that the proposed change is beneficial to the nation as a whole, it has to be firmly given effect to.

The Zamindari System in its present form did not exist in ancient India. All land belonged to the State—be it the King or the clan, and it had direct relations with the tillers in the matter of the land produce. During Muhammadan rule too, the system as it exists today was unheard of. According to Rhys Davids, the rural economy of India in the Pre-British days was based chiefly on a system of village communities of land-owners, or what in Europe is known as peasant proprietorship. And rural India was to a certain extent happy and prosperous then. The Agents of the East India Company wished to see the land of Hindustan being converted into terra regis, like that of England after the Norman conquest. Instructions were rushed by the Committee of Revenue in 1781 to the then Governor-General of India: "Leave the land with the zamindars, making settlement with them as being the best for the ryots and the country". The Officers of the Company obeyed the orders. An agency—convenient and subservient—was required for collecting the land revenue. The agency should look for its creation and maintenance on the support of the foreign rulers, for then and then only can it remain faithful to its employers. Indigenous system had to be scrapped up. Supersession of the ancient rights of the village communities had to be speeded up. The English officers of the Company were strangers to the country, its language and administration. The absence of proper maps and records of the areas and rents of individual holdings, lack of roads and means of communications and want of trained staff capable of making direct collections, made separate settlement with each cultivator impossible. Auction system for 5 years was given trial in the beginning in Bengal, but it did not work well. The clever Directors of the Company then found in the creation of the zamindari system the most effective way of carrying out their objectives. And there was no dearth of suitable men for this work in the country—men of means and power, men with hereditary relations with peasants, men who were ready to exploit the innocent villagers. A number of them came forward and there was an actual tussle for gaining favours in the offices of the Company's servants. Bids went higher and higher, and the treasury of the Company gained. But then the profits so gained created a number of complications for the Company's officers. There were disputes between rival bidders, and the officers, big and small, took sides in such disputes. There was sometimes delay and uncertainty in collection of the revenue. According to Sir William Hunter, prior to 1793, i.e., before the introduction of the Permanent Settlement the collection of land revenue led to yearly struggles between the local and the territorial magnates. So a better way had to be devised. The Permanent Settlement was therefore introduced whereby perpetual rights in land were granted to the zamindars, and the land revenue was fixed for all times, and thus we find that before 1807 this system had rendered the collection of revenue a matter of routine. The Floud Commission too are of the same opinion when they observe that "the Permanent Settlement did secure its immediate objects. Cultivation did extend and the revenue came in with unfailing regularity."

The immediate objective having been realised in Bengal, the system was gradually extended to other provinces also, such as the United Provinces, Bihar, Orissa, Assam and Madras. A new kind of right was superimposed on the cultivators by investing the revenue collectors with proprietory rights in the land for all times to come. The revenue Collectors gained at the cost of the peasantry. This inequity was realised by some highly placed officers of the East India Company at that time. Lord Hastings himself was not in favour of the arrangement which ignored the rights of the peasantry. But his hands were tied and he had to obey the orders received from England.

It is thus clear that the zamindari system in its present form owed its origin to the exigencies of time faced by the East India Company, and was a foreign creation made to suit not the purpose of the country's good but the foreign Government's convenience. The system if looked from the then Government's point of view served a useful purpose. But when looked upon from the standpoint of the vast mass of rural population, from the nation's point of view, it has caused a havoc resulting in the break-down of India's rural economy. It throttled all progress and destroyed the happiness of the country-side. Much has been written on this point by eminent writers and I do not wish to dilate on it here. The consensus of opinion is that that the zamindari system is of no use to the country as a whole and that it must be abolished forthwith. Nowhere in India has the system created, as was expected of it, a class of land-lords willing to supply capital for the improvement of the land and the extension of cultivation. It has on the contrary ruined the country.

side. It has demoralised the zamindars themselves. The harm done by this system has been tremendous. Ample evidence of such condemnation can be found in the voluminous and brilliant reports of the Linlithgow, Simon, Floud and Woodhead Commissions. The Floud Commission are of the opinion that whatever may have been the justification for the Permanent Settlement in 1793, it is no longer suitable to the conditions of the present time, and that the zamindari system has developed so many defects that it has ceased to serve any national interest. The Commission found that the Permanent Settlement had involved the expropriation of the rights of the ryots, had rendered land revenue inelastic, had resulted in inequalities of assessment, had deprived the Government of the close contact with an intimate knowledge of agricultural conditions, had imposed an iron frame-work which had the effect of stifling the enterprise and initiative of all classes concerned, had permitted creation of a number of parasitic intermediary interests between the zamindars and the actual cultivator and had led to an immense volume of harassing and expensive litigation between the landlords and the tenants. Finally the Commission expressed the view that so long as the system remained, it would be difficult to evolve any satisfactory arrangement for revising rent all over the province on an equitable basis and for maintaining the records of rights.

As in Bengal, so in Madras also a Committee was appointed by the Government to reconsider the provisions of the Madras Land Estate Act. Though the Committee took a narrow legalistic view and expressed its inability to recommend the toral abolition of the zamindari system, it too recognised in clear terms that the zamindars were mere rent collectors and the real owners of the soil should be the tenants.

The most forceful case made out against the zamindari system has been put by Sir Manilal B. Nanavati, the eminent agricultural economist of our country, who was a member of the Woodhead Commission. He recommends the abolition of this system without delay.

The reform of the land system which is so urgently needed in India involves the removing of intermediaries between the peasant and the State "All the intermediaries between the tiller and the State should be eliminated and all middlemen should be replaced by non-profit making agencies such as Cooperatives" thus recorded the Economic Programme Committee of the A.I.C.C. which was appointed recently to draw up the economic programme for the Congress under the chairmanship of Shri Jawaharlal Nehru.

It is thus recognised by all the eminent economists interested in India's welfare that this system serves no useful purpose and must go. Its abolition, therefore, is a national necessity and should not now be delayed.

Leaving aside the economic point of view, the abolition can be supported on social and political grounds also. The zamindars and members of their families have brought various social vices in the rural areas. There may be exceptions here and there, but they have been rare. The zamindars as a class have introduced in the villages certain social vices, which were formerly non-existent there, or were there in a lesser degree. Sectional rivalries, exploitation of the weak by the strong, harassing and costly litigation, drinking and gambling and prostitution are some of the evils encouraged or introduced by the zamindars. From the political point of view, too, the zamindars have not proved their usefulness to the country. They have uniformly sided the foreign Government in suppressing all

national movements. All arguments, pleadings and prayers for joining in the national struggle have fallen on deaf ears. On the contrary, when the national movements were ruthlessly suppressed, and the people's representatives were shut up in jails, the faithful agents of the alien Government came forward to form ministries at the back of their masters and made a parade before the world of that cruel mockery of working a democracy in India. The system, therefore, which stiffles all progress and keeps in abeyance the prosperity of millions of our countrymen cannot be allowed to remain any longer. It must go.

The question now remains how to liquidate this system. A great controversy is going on in the country on this matter, which unfortunately is receiving the attention mostly of the leaders of the political parties. The economists generally have not yet given full and urgent thought to this matter. It is necessary that the cooperation of economists be sought, and the land reformers and economists should both join in bringing out a workable scheme for the liquidation of the zamindari system. And this scheme should be given effect to at an early date.

At present there are two principal schools of thought actively engaged in the controversy. One pleads for payment of compensation to the zamindars. The other advocates simple expropriation without any compensation.

The school advocating payment of compensation took its stand before the dawn of political freedom firstly on legalistic ground, viz., provisions contained in Sec. 299 of the Government of India Act of 1935, which lays down that compensation must be paid for the transferrence to public ownership of such rights in land; and secondly, on the ground of equity and justice to all. This school has the official support of the Indian National Congress as is evident from their election manifesto. The Congress Manifesto of 1946 stressed that the rights of such intermediaries should therefore be acquired on payment of equitable compensation.

The other school consists mostly of the socialists and communists, who advocate the abolition of the zamindari system without payment of any compensation. There is considerable force in their arguments that compensation, if given, will result in either further taxation, which will be a new burden on the people, or in floating public loans, which may weaken the credit of the Government. The legalistic difficulty according to them has no serious force. When the country is pledged to scrap up the whole of the constitution framed by the British Government and get a new one framed by the representatives of free India, a section of the old Act cannot come in the way of the people's desire to end a pernicious system without giving any compensation to those whose usefulness the country does not recognise. It has been very aptly put by a land reformer when he writes that there is nothing immoral in not paying compensation for that which has no moral basis. As for hardships to the zamindars, this school thinks that their number being very small, the consideration of their interest should not put additional burden on the poor people of the country or its overstrained credit.

It will not be possible here to enter into a detailed discussion on the subject or to give a definite scheme for the liquidation of the zamindari system, It was desired that work should be assigned to a committee of eminent economists and land reformers. No one will approve of taking such a revolutionary step in haste. Need was felt to assign that work to a Committee of eminent

Rs. 10—10as) allowance for an adult dependent and 7s. 6d. (about Rs. 5) for the first child. That adds up to 49s. 6d. (about Rs. 33 -8as.) a week for a man, wife and first child, together with the ordinary family allowances of 5 s. (Rs. 3-5as.) a week for children who come later.

All this is going to be costly, and the insured person's weekly contributions will not be small. They will in fact be 9s. 1d. (about Rs. 6) for a man—of which 4s. 8d. (just above Rs. 3) is paid by the man himself—or nearly double the weekly premiums now paid by employed contributors and their employers to the two lesser and more modest social insurance schemes for health and unemployment which have been working in Britain since 1912.

But in addition to the contribution of the insured and their employers, there will also be a considerable State subsidy to the new insurances. This will add considerably to the financial attractiveness of the scheme to the average citizen in Britain.

It may be objected that the subsidy will be paid by the taxpayers, who are the same as the persons insured under this national insurance for all citizens. That, of course, is true enough, but the State collects income taxes according to individual capacity to pay, and not at a flat rate like the weekly insurance premiums. This means that bigger incomes bear more of the subsidy than lower incomes; to that extent, and in other ways, the new social security plan will have an equalitarian effect in Britain.

All To Share

All classes are to share in the scheme, not only those employed for wages and salaries. It will be the guarantee of pensions for the old and for widows, pensions that will make weekly contributions particularly worth while for those who are self-employed, and also for the small number of non-earners. The only non-contributors, subject to minor exceptions, will be most married women and all children under 16 years. That leaves 26,000,000 persons between the ages of 16 and 65 to pay weekly contributions.

The balance in favour of the average contributor to this scheme will, in fact, be quite remarkable. For it is estimated that, in future, the married man who draws his retirement pension of 42s. (Rs. 27—13 as.) a week for himself and his wife for as much as 10 years (say from 65 to 75) will receive eight times what he paid. That does not include any benefits, such as sick benefits, which he may draw during his working life. No commercial insurance company in the world could offer such terms.

Behind the Insurance Act stands the new scheme of national assistance under which any person aged 16 or over living in Britain (whether or not of British nationality) who is without sufficient means of support can apply to the National Assistance Board.

Uniform Standard

This scheme is the final stage of transferring from the local authorities to the Government the responsibility for paying cash according to their needs to persons not entitled to national insurance benefits or whose needs are not fully met by those benefits. One of the advantages of this centralisation is that the standard on which assistance is based is a uniform one instead of varying according to where the person comes from.

But perhaps the greatest of all Britain's new ventures in the social field is the setting up of a "Free-for-all" national health service. A complete medical service, including general practitioner and hospital treatment, is to be open for all citizens without charge from July 5.

This will have nothing to do with insurance or the payment of a specified number of contributions, though in fact the new

national insurance fund will hand over to the Treasury a sum of £32,000,000 (Rs. 42,59 crores) a year to help pay the health service bill of about £240,000,000 (Rs. 319.45 crores), a year. The average doctor in general practice may have a maximum of 4,000 persons on his list and will be his capitation fees accordingly. The close personal relationship between the family doctor and his patients will, it is hoped, be fully preserved.

The general economic and social policy of Britain today has a threefold aim-greater productivity, stability and social equity, three closely inter-related conditions. Towards these aims Britain already has a state of full employment at good wages, which seems likely to be maintained, and now a linked system of social security covering all citizens will come into being on July 5.

—*Bombay Chronicle*

MECHANISATION OF AGRICULTURE TO DATE*

By : **M. M. JAMKHINDIKAR**

B. R. Shenoy, Director Research and Statistics, of the Reserve Bank of India, in his address read before the International Conference of Agricultural Economists held at Darlington Hall, Devon England in September, 1947, had to state to the world that "we have no information on the number of tractors in use for the country as a whole," But for two provinces, Bombay and C. P. & Berar, prewar figure comes to about 248 as against 150,000 tractors at work in an industrialised country like England.

Now in July 1948, it is possible to give some definite information on the number of tractors and improved implements in the various provinces of the Dominion of India.

(1). In the Central Provinces and Berar, during the next five years ending 1952-53, it is proposed to reclaim 1,10,000 acres of *kans* infested land in the Saugor District by mechanical cultivation. Two units of 15 tractors will be obtained by the provincial Government and has been put into operation by end of March, 1948.

(2). In the United Provinces, a unique experiment of bringing nearly one lakh acres of new land under cultivation and resettling thereon nearly 9,000 ex-soldiers and refugees has been launched. During 1947-48, it is proposed to take up (I) *Ganga-khadar Scheme*:— This involves in the first year the development of 10,000 acres of land in the riverine tract of Meerut district. (II) *The Naini Tal-tarai Scheme* :—This involves the development of 10,000 acres of land and resettlement of 700 ex-soldiers and refugees and the breaking up of another 10,000 acres of land.

(3). In the Bombay Presidency, (I) it is proposed to carry out more intensive research work on the design and economical manufacturing of improved agricultural implements. (II). A separate scheme for mechanical cultivation was started in October 1944, on the appointment of a Mechanical Tractor Engineer. The Section's strength is 69 tractors and 123 additional tractors have been indented from the Central Government.

(4) The Madras Government has ordered that 50% of the provincial quota for steel should be set for agricultural purposes.

REFERENCES *

(1)..... The Hindustan Times. April 22, 1948. (2)..... Progress Report on Agl. developments in provinces by Special Commission Branch Ministry of Food. March 1948.

(3)..... The Times of India. April 23. 1948. (4). Shenoy B. R., Reserve Bank India Bulletin, Dec. 1947.

economists, land reformers and administrators who would examine the implications and repercussions, of the abolition in detail. No one would approve of taking such a revolutionary step in haste. Consequently, the President of the Indian National Congress appointed a Committee of eminent land reformers, economists and representatives of various provinces to find out how the recommendations of Economic Programme Committee could be implemented in the agricultural sector. This Agrarian Reforms Committee has been split in panels and they are studying the agrarian problems in detail. The panel on the abolition of zamindari had examined a good number of officials, landowning classes and cultivators in C. P. and they are collecting evidences in Bombay. They propose to go to Assam very shortly. The Committee expects to submit their report to the Congress President some time by the end of this year who would place the same before the Dominion Government for necessary action. Dr. Kumarappa, the chairman of the Committee in course of a press interview, observed that the Committee would formulate its recommendations taking the abolition of the zamindari system for granted.

Let the matter be thoroughly considered and let the zamindars be given facts and figures proving the uselessness of the zamindari system. But things cannot be allowed any longer to remain as they are. The process of liquidation must begin without loss of any more time. With this view in mind, I am here making a few suggestions which, if given effect to, would go a great deal to counteract the defects of the system, give some immediate relief to the peasantry and hasten the end.

As a first step, the state should immediately take over the landlord's functions and pay the landlord a fair rent for the land as has been so ably suggested by Sir Manilal B. Nanavati and Prof. J. J. Anjaria. This will break the link between the landlord and the tenant. An opportunity will thus be afforded to the zamindars to adopt themselves to the changed times and plan for other suitable occupations for themselves and their dependents. The break with the past will not be sudden and so will have no stunning effect on them. The peasants, too, will have some time and opportunity for training to do their work properly and efficiently. The Government will also thereby come in direct touch with the tillers of land and will be in a better position to enforce the scheme of liquidation of the zamindari system easily and smoothly.

Secondly, income tax be immediately levied on agricultural incomes. It will not be a revolutionary step. The idea of taxing incomes from agriculture has been present in the minds of the administrators for a very long time. In 1860, when the Income-tax was for the first time imposed in India, incomes from agriculture were included in it. Incomes from agriculture were taxed from 1860 to 1865 and again from 1869 to 1873. Later on by a strange interpretation of the Permanent Settlement Regulations, the powerful landed aristocracy of India persuaded the Government to believe that agricultural incomes were exempt from income-tax. The Government too, for political considerations accepted this interpretation. Attempts were made from time to time to impose tax on agricultural incomes. But they were all foiled by the opposition of the landlords, who have been weilding immense influence in the body politics of the country and who at every such attempt rushed forward with the cry of "Breach of faith". But as Dr. Anstey has pointed out, there is no reason why a representative government should continue to honour

a bargain made at the end of the eighteenth century between the Bengal (and some Madras) zamindars and the East India Company. There can be no breach of faith, for after the lapse of a century a quarter the original contract based on loyalty in troublous times has lost much of its meaning.

The imposition of tax on agricultural incomes will thus be a very fair and equitable proposition. And it will at the same time hasten the liquidation of the zamindari system. All economic arguments point to the urgency of the removal of zamindars. In short, their incomes must be assessed at a progressive rate.

Government should be moved to levy death duties as early as possible. A tax on the transfer of property from the dead to the living is a permanent feature in the revenue system of almost every democratic State. Death duties are in conformity with Adam Smith's canons of certainty and convenience. In India, too, at the present time no objection should be made for the levying of this tax.

Levying of death duties will decrease the economic value of the zamindari and even if the state may hesitate to take bold steps for the abolition of the zamindari system, these duties coupled with the agricultural income-tax will bring about its liquidation smoothly within a very short time.

SOCIAL SECURITY FROM THE CRADLE TO THE GRAVE

By: **SIR RONALD DAVISON**

BRITAIN claims to have been a pioneer in social betterment, and during the last 40 years United Kingdom governments of all political parties have enacted a steady stream of social legislation to better the lot of the ordinary citizen and achieve some measure of social security within the nation.

Now, after World War II, another forward move is in progress. The first step was the payment of family allowances. Since August 1946, the State has paid to the mother of a family the sum of 5s. (Rs. 3—5as.) a week for each one of her children under 16, except only the first born. At the other end of family life, the rate of old age pensions was in 1946 more than doubled for retired people. But this later reform was really only an advance instalment of the Government's new scheme of all-in national insurance, a major undertaking which will begin on July 5.

When it is in operation it will assuredly be the most complete and ambitious scheme of compulsory contributory social insurance yet attempted in any country. It will affect the whole population of 46,000,000 and will provide cash benefits during sickness, unemployment, old age, widowhood, and other contingencies. It will include a funeral grant. Married women, particularly during maternity, are to be well looked after. Those who normally work, even though they pay no contributions themselves, will receive a maternity, allowance of 36s. (about Rs. 23-14as.) for 13 weeks, and other women an attendance allowance of 20s. (Rs. 13—4as.) for four weeks. All will receive a maternity grant of £4 (Rs. 53) for each child.

Flat Rate

The normal benefits, and pensions are fixed on a flat rate of 26s. (about Rs. 17—4 as.) a week for a man or woman, with 16s. (about

The Director of Agriculture allots it Taluq or District wise according to the needs of food production. Some quota is allotted to those who manufacture and sell agricultural implements. (II) The Agriculture Department at present is having 50 tractors and 50 more tractors have been demanded. The Government are also having 724 petrol pump-sets and 12 Diesel oil Engines (pumps) available for hire to agriculturists. The Government is also considering the question of sanctioning 100 more oil engines under the five year plan for food production.

(5) In Orissa, (I) The Agricultural Engineering Section established to help the Grow More Food Campaign advises on the use of agricultural machinery and (II) under the five year G.M.F. Plan it is proposed to supply ordinary and improved agricultural implements at a cost of Rs. 2,00,000 a year on subsidised cash scale system as well as on loan and subsidy basis. Improved agricultural machineries at a cost of Rs. 1,00,000 are also proposed to be procured during each year of the five year plan for supply to agriculturists on hire system with subsidy limited to 50% of the working cost. It is also contemplated to put into operation two units of tractors consisting of 12 tractors each for reclamation of waste lands of private parties on hire. One tractor is already working.

(6). In the West Bengal, during 1946-47 about 2,484 tons of iron and steel were distributed. And for mechanised cultivation 10 tractors are being purchased. It would not be out of place if it is stated that West Bengal envisages flood protection and irrigation for about 10 lac acres of paddy area and generation of 3,00,000 K. W. of electricity (both Hydel and Thermal) in Bengal and Bihar from the Damodar Valley Project. The scheme when completed would produce 400,000 tons of paddy and rabi crops of the value of about Rs. 5 crores. The Scheme costs Rs. 55 crores of which Navigation and irrigation portion costs about Rs. 9 crores. Another Project The Mor Project—would irrigate an area of 5,95,000 acres in kharif season and 100,000 acres in Rabi season. This would yield about 3,30,000 tons of paddy. In addition about 3,000 K. W. of power would be generated from the project.

Economics of the mechanised Estate, if worked out on the basis that a bullock works for 8 hours a day (four in the morning and four in the afternoon) then it is necessary to have about 48 pairs of bullocks to do the work of a 30 H. P. tractor which can be put into work for all the 24 hours. Their capital cost at the present prices (1947) will be double that of the tractor. For an area which can be operated by 30 H. P. tractor, the former (excluding the cost of bullocks) has been estimated at Rs. 24,000 per annum and the latter at Rs. 16,000 per annum. The aggregate output may, in certain areas, multiply and a 1,000 acre mechanised farm may yield a dividend of 40% on the capital investment, which is several times that capital applied to land brings to day. And as against 200 men, now engaged on land of 1,000 acres the number of men required to maintain a mechanised estate of this size would be less than 50.

A Bombay firm has started the manufacture of tractor-drawn-implements in India and the Government of India has placed an order of 1250 of these implements. Paradoxical as it may seem the tractor drawn implements are more important in India at the present juncture. Recently at Bombay Dr. Rajendra Prasad witnessed the first five-furrow-mouldboard plough, made and manufactured In India.

As regards the imports of tractors, the Central Ministry of Agriculture has placed indents for 769 tractors from the U. K. and the U. S. A. but so far only 375 tractors have been received to date. The largest recipients among the Provinces from the above quota are—Bombay 82, U. P. 79, and C. P. 21.

WHAT BRITAIN IS DOING TO FEED HERSELF

By : **ANTHONY HURD**

WHAT is Britain doing to feed herself? Is she really making the best use of her land or is British agriculture out-of-date and inefficient? These are questions that the Canadian may well ask today when this Commonwealth country is undertaking to send to Britain all the food that can be spared even at some inconvenience to Canadian consumers.

To get a true picture it must be remembered that before World War II the farms of Britain most of them under 100 acres and carrying a big head of livestock—relied largely on imported feeding stuffs such as maize from Argentina and oil cake from Africa. It was livestock output in the form of milk, beef, lamb, pork, bacon and eggs that counted most on our 350,000 farms.

On my 500-acre farm in the English Country of wiltshire I grew perhaps 60 tons of wheat that went to feed 3,000 laying hens and about 50 tons of barley which, if the crop was not up to malting standard, went to 300 pigs fattening for the bacon factory. Some oats were grown for the young cattle, but all classes of stock, except the sheep, received imported feeding stuffs in some measure. From 1939 onwards an extra 200 acres of my grassland came under the plough for wheat, other cereals and potatoes.

Dearth of Feeding Stuffs

Now we cannot buy feeding stuffs freely and our pig and poultry numbers have been reduced to little more than half the pre-war totals. The present slender bacon ration shows the measure of our difficulties in Britain; the ordinary consumer's winter ration of two pints of milk a week also tells of dearth of feeding stuffs. The best hope that the Minister of Agriculture, Mr. Tom Williams, can offer is that by 1951 it should be possible to import two thirds of the pre-war quantities of feeding stuffs.

Why cannot the British farmer grow more food on his own farm? He does grow all he can, but the wartime rule still persists under which he must sell all millable wheat and barley through merchants approved by the Ministry of Food. After next harvest he will be allowed to keep one-fifth of these crops for stock feeding. In Britain we all hoped that the 1947 harvests at home and abroad would be good enough to allow these restrictions to be relaxed, so that we could get busy rebuilding our livestock industries, but that day is now postponed until the harvest of 1948.

In the meantime, the Government have set new and higher targets for food production here supported by guaranteed prices to cover rising wage bills and other costs. The aim is to grow 2,600,000 acres of wheat in 1948 (119 per cent. of pre-war), compared with 2,100,000 in 1947 and 3,400,000, the peak wartime acreage of 1943. The barley acreage in 1948 is to be stepped up to 257 per cent. of pre-war and potatoes kept at 209 per cent., that is slightly more than double the pre-war acreage.

Grain Crops

The British farmer can and does grow heavy crops of grain. Thirty-four bushels of wheat, 40 bushels of barley and 44 bushels of oats to the acre are about average. I have grown 60 bushels of wheat (that was in 1943), and 76 bushels of oats in 1946, but not in one season of 21 years that I have been farming, has my wheat crop failed to yield at least double the Canadian acreage of 13 bushels. I say this plainly because there are some people who think that the British

farmer must be inefficient because he cannot grow enough to feed all the people in the United Kingdom. We produce all the milk and potatoes needed and the detailed percentages of the other foods provided by home-production are :

Eggs in shell	76 per cent.
Butcher's meat	46 per cent.
Bacon and ham	36 per cent.
Cheese	12 per cent.
Butter	6 per cent.
Sugar	27 per cent.
Flour	23 per cent.

In British agriculture we are not inefficient and we are not out-of-date. Our course there is plenty of room for improvement even today when several thousand indifferent farmers have been relieved of their farming responsibilities under the drastic wartime powers. It is significant that the National Farmers' Union agreed, early in 1947, when the Agriculture Act was going through Britain's Parliament, that these powers of dispossession for bad husbandry should be continued indefinitely.

A progressive tenant farmer may be handicapped by an indifferent landlord and he, too, can be dispossessed if he does not respond to advice and directions.

Famous Breeds

It is true enough that the buildings are ancient on many of Britain's farms, designed for the days of 50 or 100 years ago when labour was cheap and plentiful. Many farmers would take readily to the compact, convenient lay-out of the Canadian homestead, but nothing but really essential building can be done in Britain today.

We have, I believe, more machinery to the 100 acres than any other country and still more is needed to make full use of every pair of hands. We can boast of many highly-bred pedigree herds which, in terms of milk yields or beef quality, can vie with any in the world and the breeder of today has not lost the skill that made the Shorthorn, the Hereford and the Ayrshire which have carried Britain's name all over the world.

A NOTE ON "AGRI-SILVI" SYSTEM

By : **N. S. KAIKINI**

"Agri-Silvi" system implies the method by which agricultural crops are raised along with forest trees. This system can be successfully followed in areas where the land for cultivation, set apart after due consideration of land utilisation do not meet the requirements of the people. In India there are tracts where the population is large and hunger for land continues inspite of making use of all suitable and available land for cultivation. Under proper land utilization certain areas of land unsuitable for cultivation of food crops are set apart for growing forest trees with a view to conserve the moisture content of the subsoil, to prevent erosion and such other considerations which are important from the point of view of general Forestry.

Reboisement of such unsuitable areas with useful forest trees is usually not a simple and cheap proposition. In the early stages the Silvicultural requirements of different species of forest trees varies according to the species as also the locality. Even in the first year of raising the forest crop (unless it is left to nature) certain silvicultural operations such as weeding, mulching, etc., have to be carried out which entail a certain amount of expenditure.

In parts of India and Burma there was a practice in vogue by which forests on hill sides were clearfelled and burnt and food crops were raised; but such areas were abandoned after a couple of years when it used to lose its fertility and new areas taken up This sort of shifting cultivation could very well be made use of in areas where land hunger persists and forest crops are also required to be raised. As a matter of fact in parts of India and Burma, people offered to grow food crops along with trees. Thus came about the introduction of Agri-Silvi system which is known in Kanara as "Kumri cultivation" and 'Tongya' in the United Provinces.

As indicated above raising of useful forest trees involves a certain amount of expenditure. This expenditure could be curtailed to a large extent if we have recourse to "Agri-Silvi" system where-in those who come forward to grow the food crops along with the forest crop do the Silvicultural operations of planting, weeding, etc., along with their agricultural operations free of cost to the Forest Department.

In the United Provinces, the Tongya system was put on an organised system about a decade back and in the initial stages it cost a considerable amount to the Forest Department. Later when the people realised that there was a good return for their labour, they offered money instead of being paid as was done in the initial stages. Thus the Forest Departments of U. P. and Bengal raised a few of their plantations free of cost and sometimes made money for leasing the land for "Agri-Silvi" cultivation.

The "Agri-Silvi" system is modified in different parts of this country to suit the local requirements. In Kanara it is very much like the shifting cultivation. The chief crop that is cultivated being "Ragi", the local hill millet.

The North Kanara district bears forest on about 85% of its area. The cultivable area is about 15% but unfortunately a large portion of this cultivable area is lying fallow and most of it lies in the above ghat talukas. Due to various reasons the population in the above ghat talukas seems to have decreased while that of below ghat talukas has increased. Any way there is no land hunger in the above ghat talukas of N. Kanara,

The " Gowdas " (a rayot community) of Ankola taluka and Kunbi Marathas of Honavar taluka are rather fond of Ragi the hill millet and there used to be some demand for Kumbri cultivation. I am not aware at present if Kumbri cultivation is still in vogue in Honavar taluka, but I do know that the Gowdas of Ankola still offer themselves to raise the plantation round about Agsur on Agri-Silvi basis. The only snag is that they cannot afford to go farther than one day's walking distance from their home village; hence the kumbri is raised within a distance of 20 miles from Ankola. The method of raising the plantation is simple. The clearfelled and burnt area is planted according to the required espacement with teak and other approved species. In between these plants Ragi is broadcast. Since the Kumbri cultivators look after the weeding and cleaning operations, the plantation is raised free of cost of weeding and other operations.

Some twenty years back in Sambrani range and perhaps elsewhere Agri-Silvi plantations were attempted but due to something going wrong somewhere it was discontinued. In Kanara Eastern Division, the cost of weeding in the first year is rather high. The most aggressive weed is the grass which in places grows to a height of over ten feet. This necessitates heavy weeding operations which are rather costly.

If such plantations are raised on Agri-Silvi system the cost would be considerably reduced. But unfortunately no Kumbri cultivators are forthcoming. Last year under 'grow more food' campaign Range Forest officers were directed to grow vegetables in the clearfelled areas. The areas where Rajgiri and a variety of spinnach (both Amarantaceae) was broadcast indicated considerable reduction of weeds Thus I feel if the plantation is raised on Agri-Silvi system even departmentally it is definitely going to reduce the cost of raising the plantation and secondly it will go a long way in helping to contribute to the general 'grow more food' campaigns.

Last year the Divisional Forest Officer, W.D. Kanara, raised some hill paddy in one of the plantations. A small quantity of seed of this paddy has been secured for this Division and it will be tried in Yellapur and Kirwatti Ranges. If this is proved successful I think, we should raise our plantations on Agri-Silvi system only.

Thus in Kanara District (North) the Agri-Silvi system is desirable especially in regeneration areas in forests to reduce the cost of planting and weeding and secondly to help the Grow More Food Campaign. This system on a large scale is not warranted due to the fact that a large area of cultivable land is lying fallow for want of agricultural labour and hence there is no land hunger.

Oilmen's Cooperative Society of the Bombay Province

By : **S. K. KALLAPUR**

THE revival of village oil ghani has been engaging the attention of the Bombay Government for some years. A new type of ghani,- the Haskell Ghani—has been designed by the Department of Industries to press a bigger per centage of oil within a much shorter time. Hereditary telis are given training at Poona in the use of the ghani and in pressing out oil. They are given a scholarship of Rs. 20 a month during the period of training. The journey expenses from their village to Poona and back are borne by the Government. The training occupies a month. After the training, the Teli becomes entitled to apply for a loan for the purpose of ghani. Half the amount granted by the Government is treated as a subsidy, and the other half is repayable in instalments which are spread over five years.

The institution of the village oilmen has been in existence in India ever since the use of oil and the method of its extraction came to be known. There were one or more of them in every village according to the requirements of it. The growers of oil seeds used to keep with them sufficient oil seeds after the harvesting was over for pressing out as much oil as they required for consumption during the year. The rest used to be sold away. The oil seeds retained by them were at times entrusted to the oilman who used to press out the oil during his leisure. The owner used to take away his oil whenever he required it and in such quantities as he required. In a large majority of cases no cash payment was made for the work, but the oilman was allowed to retain the oil cake. In some cases, the payment was made in cash, in some cases in rice, and other cereals, and in some a small payment in money was made in addition to allowing the oilman to retain the oilcake. The

oil ghanis and the bullocks employed in ghanis belonged to the Teli. The villagers could provide work to him during the whole of the year. The following advantages arose out of this system:

1. The oilman was not required to invest any money in the purchase of the raw material.

2. The village was self-sufficient; the homes too were self-sufficient in the matter of oil.

3. The oilcake which is a very useful cattle food and manure did not go out of the village.

4. Employment was found for the oilman and his assistants.

How this system was working satisfactorily is within living memory of many of us. But after mills came to be established their agents began to frequent the villages for the purpose of oilseeds. The cash which they offered very early in the season soon after the harvest was too tempting to be refused by the producer of oilseeds. So he gave up the practice of storing the seeds. Money was easier to be kept and had, besides, more uses. The malpractice of the oilman too contributed to the producers' abandoning the old system — for in a number of cases when he had the oilseeds entrusted by the growers, he sold them away to the agents of the mills and when pressed hard purchased comparatively inferior mill oil and passed it on to his clients as pure ghani-oil. For a time prejudices against the use of mill-oil atleast for edible purpose persisted. But it gradually disappeared as the grower stood to gain by selling away the oilseeds in the early part of the season. The oil could be had at any time of the year. The corrupt practices of the oilman accelerated the pace. The village ghani had almost disappeared at the commencement of the World War II.

Various causes contributed to the revival of the ghani during the progress of the War, the difficulties of transporting the oil and the oil seeds, the high prices of oil being the most important among them. Such of the Telis as were persevering were amply rewarded.

More and more oil mills are coming in. The question is how the village industry should be saved from the catastrophe.

Four oilmen's Cooperative Societies were registered in the course of this year (1947-48). The objects of the Societies are to combine the Telis living in an area, to pool their resources for the purchase of oil seeds and for marketing the products of the industry at as advantageous rates as possible. Some of the Telis employ other servants on daily wages to get all the work done by them.

It is pleasing to see that all of those Societies have been able to show a proud record even during the short time that they have been in existence. One of the main difficulties of the industry is that it requires a very big capital for the purpose of raw material. Even an ordinary village ghani requires about 2 bags of oil-seeds (or Rs. 50) a day. One decorticator or shellar sufficies for three ghanis. In the case of a large number of ghanis, one man can easily attend to two ghanis. Hence the industry would run economically only when at least two ghanis work in a shed. So, an initial investment of Rs. 2,150—Rs. 800/- the price of two ghanis, Rs. 600/- the price of a decorticator or shellar, and Rs. 750 the price of three bullocks—would be required. I do not take into account the cost of erection of the sheds for the housing of the bullocks, and the ghanis.

Three men and one woman should be engaged. Their wages and the feeding charges of the bullocks come to about Rs. 10, and a daily investment of Rs. 100 for the purpose of oil seeds would be required.

The Government of Bombay have been kind enough to guarantee the repayment of the loans taken by the Societies for the purpose of the oil seeds. The purchase should be made when the prices are the lowest, and the sale of the oil should be made when the prices of oil are the highest in order that the Societies should make profits. All of these Societies are situated in important Taluka places, it cannot be otherwise, for it is not possible to find ten Telis doing the oil pressing work in the same village. It is the object of these lines to suggest how societies of this type should work to continue to show profits. Two well established Cooperative Societies carrying on similar work at Vaikom Shertala, (Travancore), and at Narakkal (Cochin), sustained in recent periods very heavy losses as a result of the decline in the prices of copra and cocoanut oil.

As stated above, Societies of this type would show profits only when the prices go on rising, at no rate so long as they do not decline. They are bound to lose if the prices begin to decline after they make purchase of the oil seeds. So, expert advice should be available to the Societies to guide them when to make purchase of the oil seeds and when to sell the oil. I have not seen more violent fluctuations than in the prices of oils and oil seeds.

The rise and fall in the price of oils and oil seeds depend on a number of factors. India is the biggest producer of all kinds of oil seeds except copra in which commodity she occupies the third place in the world. She is a very big exporter of all kinds of oil seeds and oil except copra and cocoanut oil of which she is a very big importer. I leave alone the case of copra and cocoanut oil as the Societies mentioned above have nothing to do with them, and shall confine myself to the conditions prevailing in the market of other oil seeds. Firstly, it depends on the production not only in our own land but all the world over. Secondly, it depends on the demand not only Indian but International. Only a very small quantity of the oil is used for edible purpose. A large portion is used for industrial purposes such as the manufacture of soap and vanaspati. Hence, to a large extent the price depends on the requirements of the industry. In their turn, the demands of the industry depend on the supply of other ingredients for example caustic soda, in the case of soaps. The decline of the prices in the course of this year was mainly due to the refusal of the Governments to allot the required quota of caustic soda to the soap industry. The rise and fall in prices next depend on the prices of other kinds of oil that can be used for the industries mentioned above. Usually the prices are low during the harvesting season. If for any reason railway wagons or other transporting facilities do not become available, when the stocks with the merchants increase, the prices go down. But if the facilities become available, the prices shoot up. The present policy of the Central Government is to discourage as far as possible the export of the oil seeds and to encourage the crushing of oils in the country itself permitting their export. But sometimes, particularly when imports of essential commodities from foreign countries become necessary, the export of oil seeds is permitted and even encouraged. Then the prices suddenly shoot up.

It will be thus seen that the yield or the supply is not all that matters. Hence, as stated above, firstly, a very strong agency to supply market intelligence is essential for Societies of this type to prosper. Secondly, a contract should be taken by them at the commencement of the season to give them an idea of the prices at which they should purchase the oil seeds.

Some objections are pointed out about the Societies of this kind. In the first place, the

THE RURAL INDIA

Vol. XI No. 9] OCTOBER, 1948 [Whole No 116

"Salvation of India lies in Cottages"

—*Mahatma Gandhi.*

'THE RURAL INDIA' COMPLETES TEN YEARS

The present issue brings to an end Ten years labours of 'The Rural India' in the service of the rural masses. 'The Rural India', made its first appearance on the Ist of November, 1938 in the wake of Provincial Autonomy. It is a matter of supreme thankfulness to the 'All Merciful' to have blessed India with Complete Independence before 'The Rural India' completes first decade of its useful service to the Nation.

The last 10 years have not been favourable years for rural or national reconstruction is obvious enough. They have been rather years of unprecedented destruction and human misery the world over including our own country. And the pity is that the much hoped for New Era of peace and prosperity that was to dawn to the common-man of the world after the termination of the World War II only turned out to be a myth bringing in more frustration and misery to the war-torn humanity.

We seem to be under the dark shadows of the World War III, which only a miracle may avert. Acute political tension between big powers, accompanied with race for armaments and war preparations have made the task of peace and reconstruction almost impossible. The chances of peace, mutual understanding and cooperation between the nations of the world, which are conditions precedent to progress and development, seem to be very remote just at the moment.

For all what we see around us, it seems, it is one of the darkest phases of human history we are passing through. The process of suffering, though painful, is inevitable in the march of humanity towards higher evolution. There is no such a thing as pain-less birth and every birth is accompanied with some amount of pain. The present suffering of the people the world over is no other but the birth-pangs of 'One World Order' that is coming and it is probably coming sooner than many of us believe. Whatever else the World War II may or may not have done but it has immensely brought about interdependence of the nations of the world and made them conscious of the 'One World' destiny of mankind. In the words of Pandit Jawaharlal Nehru, humanity has reached a stage when 'Either there should be One World State, or there will be no World at all'.

Since, all big changes in human history are accompanied with some amount of suffering, so big a change as the establishment of 'One World Order' cannot, in the very nature of things, take place without it. We are all therefore called upon to look at our present sufferings in this correct perspective and face our ordeals with courage and determination in the expectation of a grand future that awaits us.

With a back-ground of abnormal and disturbed conditions such as they exist everywhere else and also in our own country, the fate of a constructive enterprise as the publication of this Journal cannot be an enviable one. That it has survived these 10 years in the midst of unfavourable conditions, without adequate response and scope of service is a proof of its strong inherent vitality and the fire of 'Constructive Mission' which sustains it. Even to-day, when 'The Rural India' enters into the second decade of its career conditions for constructive and creative work are less favourable than what they were ten years back.

Though, we have attained political freedom, we have not as yet made satisfactory start towards economic freedom by way of providing much needed relief to the masses. While fighting for our freedom we had made solemn pledges to them that poverty and hunger will be a thing of the past in a 'Free India.' That pledge remains to be redeemed and it is a moral obligation on our leaders and administrators to have it redeemed without loss of time, before the masses begin to lose their faith in our capacity to look after their interests.

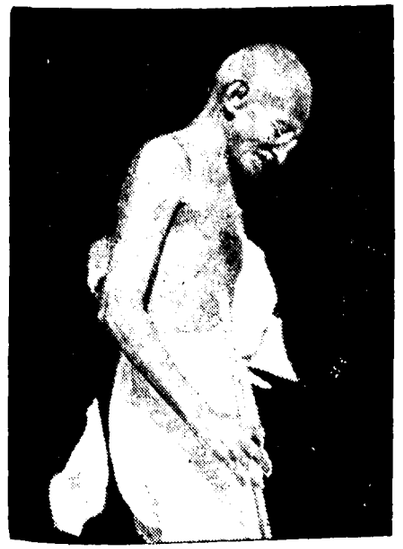
The task of the national administration is to provide immediate relief and succour to the masses. This problem when viewed against the falling production of the essential commodities of life, extreme shortage of supply and sky-rocketing prices, seem to be extremely difficult. The pinch of starvation and ill-clothing rather than being relieved has become all the more acute since we have attained freedom and the lot of the poor and the lower middle class people is unbearable beyond description.

While these lines are being written, the Union Government are busy in formulating their policy to fight the economic crisis and an early announcement is expected. The present crisis is the result of a combination of factors and the Government will have to adopt many pronged fight to deal with control of commodities, their production and distribution and also monetary control. We believe, the Government is alive to the extreme gravity of the economic situation and they have prepared themselves to give priority consideration to this very vital, but hitherto much neglected question.

The scope and comprehensiveness of the economic question under consideration of the Government are indeed baffling. It embraces problems of production, distribution, control of commodities and prices, facilities for transport, public cooperation, financial and administrative efficiency of the Government and a host of other allied factors and facilities. The national Government being new to the job with no previous experience in matters of administration, the means at its disposal being not too ample, and the operative machinery being the same old wooden one, one cannot easily feel optimistic about sure results in this complicated and very difficult task which demands strong Government 'Drive', backed by creative and constructive talent of the highest order. The declaration of Government policy, important as it is, cannot miraculously alter the factors, hampering the solution of the problem. The Government is on its trial. We only hope and pray that it may give sound lead to the Country and enlist people's co-operation in combating the evil that faces them.

NOTES

GANDHI JAYANTI



'Test of our loyalty to the Father of the Nation

As usual Gandhi Jayanti week is being celebrated all over India from the 2nd to the 9th of October ever since Mahatma Gandhi's advent in Indian political life. The week is generally devoted to the propagation of the message of Charkha and all that it symbolises. Charkha and its message of creating non-violent society through it were the objects dearest to Gandhiji's life and so long as he lived, he tried to focus the attention of his people to imbibe this message during the week.

This is the first year that we celebrate his Jayanti when he is no longer with us. He is gone, but he has left his undying message to his people. And we who owe loyalty to him could best express it by following his eternal message of Truth and Non-violence for which he lived and died. Now, that he is no longer in our midst, we should prove by action how best to pay our homage to him and commemorate his memory to the glory of India and to ourselves.

His contributions to his country and also to the world at large have been too numerous and varied. But what he strove most all his life was to spiritualise the political life of India and through India that of the world by insisting on two fundamental principles of Truth and Non-violence in all dealings between men and nations. During his life, we regret to have to admit, his own people failed him by not implicitly following his great spiritual message. Therefore, even the Freedom of India when it came, did not make him happy and he practically died a broken-hearted man.

Why? The lesson is obvious. The Swaraj or Freedom of his conception was different. And we who profess our loyalty to him failed to come up to the standards he set for us.

It made his last days in Delhi most miserable to see his life's dream shattered. Rather than spiritualising the political life of the country and rigidly following the two great principles enunciated by the Father of the Nation, we his children betrayed him by starting on a steep and downgrade race and misappropriated the new found Freedom for personal power and ambition. The drift and downgrade race still continues unabated. And, if it continues it is the undoing of his life's mission to whom we are morally and patriotically pledged to be loyal.

How to check the rot that has set in the country after getting power and how best to express our loyalty to his great and immortal heritage are the two questions which demand serious attention of the Congress and the leaders of the country at this juncture. 'Power corrupts people', is a well-known adage. It should only be given to people

who may hold it without getting corrupted. That in other words means that the man and his personality should be bigger than the position he holds. Or, he is likely to get power-intoxicated, lose his head, get corrupted and do harm to himself and his country. Power is a double edged weapon which can do immense good or incalculable harm. It should therefore be entrusted to the most skilled and the ablest persons. We are constrained to say that the principle of 'Quality' is being sacrificed in making selection of people for administration, which is responsible for the present rot and must immediately be checked by making the best selection of personnel for public services from top to toe.

As for loyalty to the principles of 'Truth and Non-Violence', the great heritage bequeathed by Gandhiji to the nation, the responsibility lies with the leaders of the country who are sitting at the helm of national administration today. It is a sacrilege to talk of these high principles in an atmosphere full of demoralisation and rank corruption. If the nation really means to stand by these principles and decides to build national character on their basis, the leaders and administrators should rigidly set their face against any thing that infringes or goes against them. Gandhiji was prepared to sacrifice Swaraj for Truth, which to him was God itself. If we really mean to follow him we should have living faith in the potency and ultimate victory of these principles as he had and we should also be prepared to make the same amount of sacrifices for their sake. It is impossible to serve God and Mammon both at the same time. Let the nation and its leaders make a final choice in the matter and save the great principles of the Great Master from being exposed to ridicule. Let us realise our limitations and end the present day hypocrisy of talking of big principles when we do not sincerely and earnestly mean to shape our national character on those principles. Let us be true to ourselves and to the world at large and let us pay our homage to Gandhiji by what we are and not by what we pretend to be.

CRITICAL FOOD SITUATION

The latest review of the agricultural situation in the country issued by the Government shows that there is extreme shortage of food-stuff in the country and the prospects of the next 'Kharif' crop are definitely less satisfactory in view of the floods in the United Provinces and Bihar and drought in other areas such as Saurashtra. The malady of food shortage has become chronic in this predominently agricultural country and the people seem to have resigned themselves to a state of semi starvation more or less permanently. The advent of the National Government has brought no relief to the people on food front and the situation is worsening every day. On the appearance of every crisis, the Government rather than managing and improving the situation and working out permanent cure gives out a catalogue of its own difficulties and drawbacks hampering solution of the task in hand. This, to say the least, is not the way an efficient Government should function.

Recently, the Food Minister of the Government of India called a Conference of the Agriculture Ministers of the Provinces and States in New Delhi to increase the production of food in which he is reported to have said:—

"No country can formulate any plans of progress without an accurate idea of the existing state of things and the extent to which they affect the direction and rate of future progress.

"Yet, when one tries to study the agricultural statistics of India, one cannot help feeling that one is dealing with data which

is not wholly reliable. It is high time that we reorganised our machinery for collecting accurate agricultural data and the proposal of the Food and Agricultural Organisation of the United States to participate in the organisation of agricultural census in 1950 is a welcome opportunity to put our statistical mechanism into good working order.

"But to enable India to achieve this result, agriculture must be allowed to come into its own and receive the priority it deserves in our nation's plans. Agricultural wealth is the basis of our industrial activity and national prosperity. Unless we spend more money and employ more manpower for the improvement and development of agriculture, we will continue to face uncertainties and put up with foreign dependence in a matter so vital as food.

"Many critics have placed before us constantly the achievements of American agriculture but we do not realise how incomparably vaster is the Governmental effort which supports the activity of the American farmer. Apart from the huge sums which each individual State spends, the Central Government of the United States provide, a sum of Rs. 80 per person as against an insignificant one anna per person which our Central Government are able to use for the country as a whole. The Central budget can provide only 12 annas for agriculture out of Rs. 100 spent on the entire field of Government. A few years ago, it ranged from four annas to eight annas out of Rs. 100.

"Even if the country had other difficulties and bottlenecks, a great deal was going to depend upon the manpower which the country could marshal for agricultural improvements.

"We must create a series of links between the headquarters of the Government departments and the cultivator. Some work in this line, I know, has been done in one or two provinces, but it needs to be vastly and rapidly increased. We have, in the villages of this country, 150,000 co-operative societies with a working capital of over Rs. 30 crores. We should mobilise all this manpower and divert the main energies of these societies to the programme of food production.

"The key to the agricultural progress in America and some other western countries, was not so much mechanisation or other modern methods of agriculture as widespread human agency working at the organising of agricultural development."

The Food Minister is correct that agriculture, the main industry of this country has not come into its own. Rather, it has suffered complete neglect at the hands of the foreign government. That the Government spend only Rs. -/12/- on agriculture out of every 100 rupees they spend on administration shows under what tragic neglect the subject of food and agriculture suffers in this country. It is high time, the National Government revises its attitude in this vital matter of country's food supply and gives priority consideration to agricultural production. The test of Government's change of attitude lies in allotting ample funds for the production of food and creating a vast agency for agricultural development.

FIGHTING INFLATION

The inflationary spiral of rising prices and extreme shortage of supply of the essential commodities of life have affected all classes of people in general and the poorer section in particular, creating grave economic crisis of which there is no parallel within living memory in this country. For various reasons, the National Government allowed the economic situation to be deteriorated,

ever since its assumption of power till it is forced by circumstances to pay immediate and earnest attention to it. As the press reports go, they are now busy formulating an over-all economic policy to fight the present menace of inflation and to improve the economic situation of the country as a whole.

The economic problem is the most baffling problem, the Government are called upon to tackle and they will be judged by the country by their solid achievement in solving this very vital task. Mr. K. S. Venkatraman has, in the course of his article published in Bharat Jyoti, discussed some of the principles that should govern the economic policy of the Government in fighting inflation and made useful suggestions which deserve consideration. His suggestions are:—

"1. Without prejudice to the long-term objective of increased production and the measures appropriate to it, the Government should do everything that will assist the transition from the post-war boom to economic prosperity and stability. Physical controls like rationing, regional distribution, production and procurement and price stops will be imperative; though their pattern will have to be overhauled. Their success will depend on public support that they will be able to enlist and public confidence they will be able to inspire.

"2. Since the gap between the purchasing power and the supply of goods is so wide that it cannot be bridged by increased production for a fairly long period to come, the corrective should be sought in the immobilisation of excess purchasing power. Even at the existing prices it is estimated that a sum of Rs. 300 to 400 crores of notes and an equal amount of bank money are redundant. This has to be mopped up without producing deflationary pressures if a further rise in prices and costs are to be prevented. This can be done and should be done. Freezing a part of the bank deposits, and a part of the current money incomes (wages, salaries, profits or dividends) will be an essential feature of the strategy. This should be followed by measures which would correct the inequalities of income distribution caused by inflation. This can be done only through the measures of direct taxation like Excess or Business Profit Tax, Capital Gains Tax, Death duties and income tax.

"3. Excepting genuine capital expenditure, all expenditure of the Government as far as possible must be met from taxation. The accent should be on direct taxes like income tax, land revenue, agricultural income tax etc. than on indirect ones like purchase taxes, excise duties, turnover taxes, terminal taxes etc.

CEILINGS ON WAGES

"4. Ceilings should be put to wages, incomes and profits and they should be reduced by stages to a reasonable level. Stabilising wages at 180 per cent. of their pre-war level will be appropriate. With the gradual fall in the cost of living, there can be a corresponding reduction of dearness allowances. Thus the reduction in money wages can follow without a fall in real

wages. The same applies to those in the services of business firms, Governments, etc., who belong to low income groups. But in regard to the higher income groups in the services, their salaries have advanced more rapidly during the war. They have to be readjusted. The control of profits is more urgent and demands more stringent measures. The capital structure of business firms has to be regulated by law. High rates of interest on debentures and preference shares should be converted at rates consistent with a three per cent money. Dividends on ordinary shares and deferred shares should be limited to twice the average amount that was distributed over the quinquennium preceding the war or to 4 per cent (tax-free) on paid up share capital and reserves (making allowances for increase in productive capacities, increase in production, etc.).

"While the industrialists' demand for a larger percentage on depreciation account should be conceded, the distributable profits after payment of dividends should be immobilised. This is more important than small savings drive. They should be released for the purpose of expansion or modernisation of equipment. In other words, while enterprises should not be allowed to languish for want of capital to finance genuine investments on increasing productive capacities, their current incomes and excess purchasing power should be frozen. The objective in freezing the current incomes and purchasing power of individuals and business firms is to reduce the present pressure on goods. At present investments take the form of holding goods. Such investments or hoardings in the context when the supply of goods cannot be correspondingly stepped up result in inflationary rise in prices. Hence they are to be discouraged. This immobilisation should continue till the Reserve Bank is able to enforce its credit policy.

"The questions of nationalisation of industrial undertakings, the release and utilisation of reserves held by them should be considered later on their merits after ascertaining to what extent they are the result of efficiency of private enterprises. That the small investor will be hit if there is ceiling of dividends, and if there is consequently a fall in the capital value of his investment is nothing more than a bogey raised by vested interests with a view to shielding their illgotten wealth and to maintaining their incomes.

Real Economy

"5. While Governments, Central and Provincial, should try to balance their budgets, the emphasis should not be on economy through retrenchment and abandonment of schemes for the expansion of social services but it should be on economy by reducing the salaries particularly of the higher and non-technical services. The abandonment or slowing down Prohibition will be a betrayal of the ignorant and illiterate common man. It must be obvious that retrenchment in the present context as contemplated by the Central and Provincial Governments will open the flood gates of unemployment, fall in incomes, fall in effective demand and other consequences. None can contemplate this prospect with equanimity. The promise of the industrialists that they would behave properly and would be able to absorb ere long the unemployed is a post-dated cheque on milliniem which they cannot create.

"The basic condition of economic stability is the provision of work and an assurance of a minimum income to all. This is the hope that is held out by the Nehru Government. This can be secured only by the State and not by private enterprises. Hence it is urged that the Governmental outlay should not be reduced unless there is an immediate expansion in the outlay in the private sector of our economy. Wasteful expenditure which the industrialists demand to be curtailed is a class concept intended to stem the tide of socialism

and to reduce the burden of taxation on their income.

Direct Taxation

"6. The emphasis in balancing the budget should be on additional taxation than on borrowing, should the need arise. Direct taxes should be relied upon and could be relied upon by a truly popular Government, for it is through them that the economic burden of taxation can be equitably distributed. When borrowing is resorted to, (it cannot be evidently avoided so long as Kashmir and Hyderabad issues are unsettled) the requisite funds should be raised without disturbing the structure of long-term interest rates, though the interest rates on national saving certificates and treasury bills may be slightly raised.

"7. The disequilibrium in the domestic prices, costs and incomes should be corrected by appropriate legislative directives, fiscal measures and controls. But the gap between the internal economy and the world economy is so wide that nothing can be done by the Government of India alone. The proposal to devalue the rupee is fraught with mischievous consequences, and therefore should not be countenanced. Tightening foreign exchange control, and tightening the export and import restrictions would do to insulate the national economy against the impact of forces of instability coming from abroad. Liberalisation of import restrictions would reduce the prices of sugar and other odd things, but it cannot appreciably bring down the price-level, for inflation is a post-war global problem and the whole world is short of essential goods. Liberalisation of import of capital equipment and foreign skill will assist the situation at least in the long run.

"Lastly, the battle against inflation should be conceived not as an isolated problem, but as an aspect of the problem of economic planning, of the problem of assisting the transition of the economy from the post-war boom to peace-time stability."

EFFICIENT PUBLIC SERVICE

"In the interests of both those who desire to serve the country through the administrative services and of the rest whom they serve, order, economy and efficiency must be made the hall-marks of public service. In this connection the provincial public service commissions aided, encouraged and instigated by the Federal Public Service Commission, have an important role to play. They must emerge out of the lethargy and eschew that shyness of publicity which has characterised their behaviour in the past.

"The country is in dire need of efficient administration today. For an efficient administrative system is the pre-condition to the successful working of secular democracy. But, for an efficient administrative system the first requirement is the selection and appointment of truly capable recruits. Such maladjustments as a rush of candidates for some posts and a paucity for others particularly those of a more technical or specialised kind can be avoided firstly by making the tests of fitness more rigorous and secondly by promoting facilities for training. But however rigorous the tests of fitness may be made these efforts at increasing the efficiency of the administrative system will be entirely nullified if the task of selection and recommendation which rightly belongs to the Public Service Commission is taken away from them even temporarily by appointing authorities or by the governments.

"Once selected the public servants have to be kept at the high-water-mark of efficiency. Promotion must therefore not be arbitrary but must be based on records maintained in great detail and with meticulous regularity. Staff Advisory Councils along lines of the National Whitley Councils in England should serve admirably to promote efficiency as well as to safeguard the interests of the public servants."

—*The New Democrat*

PLANNING OF LAND USE IN INDIA

By : **G. D. AGRAWAL**

India today is faced with the question of increasing the production. The "Grow More Food" campaign was launched in 1942. The Centre spent nearly Rs. 5 crores besides the huge amounts of the Provincial Governments but no appreciable improvement in the over all production in Agriculture resulted.

This necessitates re-examination of methods employed for increasing the supplies. So far the trend of thought and resulting plans for increasing agricultural production have been in terms of increasing facilities for irrigation, manure, improved seeds, etc; but the idea of planning land use has not yet come to the forefront. Consequently much of the effort and money spent on a number of development schemes have not yielded desired results and sometimes the effect has been even negative.

Land is the permanent asset of a nation and a predominant factor in agricultural production. Planned Land Use or what is also termed as 'Soil Conservation Farming' refers to use of each bit of land for the purpose for which it is most suited and in a manner that the soil improves in fertility or at least balance is maintained between the annual loss of soil and its replacement from the sub-soil. The most advanced country in this respect is U.S.A. where complete Conservation Planning, whereby each acre is used accordingly to its capability and given treatment according to its needs, began in 1933. It has proved so successful that by June 30, 1947 more than 3/4 of the total number of farms, i.e. 4,450,000 farms with an area of slightly more than 1 billion acres are included in the 'Soil Conservation Districts' numbering about 1,900; with the result that the food consumption per person was 17% above the pre-war (1936-39) average and the country exported more than 19 million tons of grain and other food mostly to starving countries including India.

We in India have paid scant attention to our land, more so, during the last two centuries. Increasing population with increasing dependence on land for livelihood in the absence of corresponding increase in alternative industries and professions, loosening of village communities' hold over village land and its ultimate disappearance, multiplication of Zamindar and tenant land-holder class with the only aim of extending cultivation to all land and squeezing the maximum rent without playing their legitimate role, the creation of a class of cultivating tenants without interest in land, increasing trade in agricultural produce with foreign countries and indiscriminate laying of roads, canals and railways irrespective of drainage considerations have all had cumulative effect in ignoring essentials of proper land use. Our land, to-day, is most wrongly used and, little wonder there is, that it yields the lowest and refuses to respond to isolated measures towards increased production.

According to unanimous verdict of all the forest authorities throughout the world at least 20% of the area should be under forest, if a country is to be self-supporting in timber and fuel and for maintaining a proper balance in land utilisation. Thoughtless destruction of forests in India has reduced the area under them to 13%. In pre-British period the village communities exercised common control over pasture land, groves, village sites, tanks and wells, etc. but, with the policy of land settlement followed under British rule, the rights over them were vested in Zamindars which have resulted in extension of cultivation to pastures, groves and village sites and neglect of tanks and wells. In the words of Shri M. D. Chaturvedi, I.F.S., "The continuous

encroachment of the plough has deprived cattle even of standing space which is now provided by public thoroughfares to the eternal despair of motorists. Again it is unbridled extension of land cultivation which has condemned human beings to live in most congested of mud-hovels. The progressive disappearance of tree lands has compelled the cultivator to burn cow dung manure as fuel."

Many are misled to believe that there is plenty of culturable waste land in India by the official figure of 97 million acres. An official survey of land resources in the U. P. showed that hardly 9.7% of the culturable waste in the U. P. can be brought under the plough. In fact, but for limitation of water and power equipment, the cultivation has been extended to the utmost irrespective of any consideration of the suitability of land.

Small and scattered holdings, 2/5th of which are even less than 2 acres, have forced the farmers to adopt most unbalanced system of farming characterised with faulty crop rotations leading to excessive use of land under exhaustive crops, lack of soil recouping and fodder crops, and practically no manure. In my recent visit to a Jat village in Muzzafarnagar District, one of the best agricultural tracts in the U. P., the cattle were being fed on tree leaves. The explanation that the farmers furnished was that the increase in area under sugarcane was responsible for shortage of fodder during summer months. It was not a special feature of this year but is now a chronic problem in the locality every year. Of the total cropped acreage, in India, about 76.1% is under the soil exhausting cereals and money crops. All the money crops, occupying about 18% of the total cropped area, and some cereals are highly erosive crops as well. The area under gram and pulses which help the soil to recoup itself is only about 17%. The fodder crops occupy only 4.2% of the cropped area whereas India possesses approximately one third of the total bovine population of the world.

Therefore, the picture of land use is a vicious circle. Care and management of vegetative cover have been 'nobody's child.' Indescriminate felling of forests, dependence of village cattle herd for their maintenance on waste lands without any other adequate arrangement of their feed, continuous extension of area under the plough, increasing cultivation of money crops which leave no residue in form of dry chaff (Bhusa) for animal feed; all these factors, further accentuated under the stress of the last war, have been operating from ages. Consequently accelerated erosion of the land has gone on unchecked, pastures and grasslands have been overstocked with grazing cattle, natural drains and reservoirs have been silted making floods a permanent feature of rainy season in the catchment areas of the most of the rivers damaging thousands of lives and millions worth property every year and above all the basic irreplaceable resource—the soil which no nation can afford to waste. Continuous starvation of cattle reduces their work or milk yielding capacity. The farmer tries to compensate their poor quality by increasing their number which means mere severe competition for grazing on ever dwindling pasture lands, further starvation, heavier erosion damages and the vicious circle continues. And hence, inspite of a very high density of oxen on cultivated area, 43 on 100 cultivated acres (Report on Marketing of Cattle in India, 1946), the total number of working cattle falls short of total demand by 3.71 lakhs. Also, inspite of 65.8 million milk cattle our milk consumption per capita is hardly 1/6th of U. K. and, on an average, 1/4th of the other countries.

The soil loss through erosion, as a result of unbalanced system of farming and destruction of vegetative cover, is aggravated still more by the characteristic Indian rainfall, 9/10th of which falls within four months of the year and that too in heavy torrential down pours. In U. P. alone, the total area under

ravine and khola is estimated at half a million acres besides the damage to land through sheet erosion which is like a wasting disease that effects the whole body but exhibits no serious outward symptoms until it advances too far to be controlled. However, we are all familiar with the sight of muddy water flowing in the village field drains during rains. The top soil, washed away by the flowing water after a shower, makes the water muddy. Billions of tons of soil is washed away to the sea in this manner every year, causing damage on the way through floods, deposit of unfertile clay on otherwise fertile fields and making them barren and silting of rivers and tanks. Most of our irrigation tanks have gone out of use through silting. The recent tank cleaning and tank digging is just a temporary measure, the real issue being the control of silting by stopping soil erosion.

Few of us realise how the life of a nation and its civilisation depend on 6" to 8" of top soil which the earth has taken innumerable number of years to build and it can be lost through wasteful methods of land use in a few years. Not only the soil but also a relatively greater amount of the soluble chemical nutrients vital to the plant are lost. The eroded land is left poor, highly susceptible to erosion and water run off losses are quite high on such lands. It has been proved that the soil lacking in certain essential minerals, not only gives poor returns but the quality of produce is also poor and certain human and animal diseases have been traced to a lack of trace elements in the soil. Better irrigation and improved seed manure are no compensation to soil lost through erosion. This is also partly a reason why full benefit of their use and application is not available in the form of increased agricultural production in India.

Instead of taking a lesson from the mistakes made by the early farm settlers in U.S.A., our people who matter, under stress for more agricultural production, are, today, advocating and adopting practically the same methods of cultivation as were practiced in U.S.A. in the pioneering stage i.e., extension of cultivation to new lands irrespective of their capabilities and heavy mechanical cultivation. Many of us think that tractor cultivation, deep ploughing, and more use of land by growing of more than one crop in the same field mean more yield. Thousands of acres of waste land are being brought under cultivation by deep ploughing with heavy tractors. It was only a little over 300 years ago that the white man's plough first pierced the soil of America and to-day the situation is that a hundred million acres of good land are gone. Of another hundred million acres, more than half the top soil is gone and on a third hundred million acres, erosion processes are actively under way. It is unfortunate that no such statistics of erosion damages are available for India yet we find that our land is still yielding something inspite of thousands of years of cultivation and incorrect land use. It is so only because of the methods of cultivation followed in India which we often term as primitive i.e., stirring of soil with 'desi plough' unclean cultivation with stubbles and weeds remaining in the field, mixed cropping and field system of narrow level strips each with its ridges to retain the rain. To-day we find that economic forces in India also i.e., high prices of bullocks, high cost of their maintenance, high agricultural prices, high wages and labour scarcity all favour mechanisation of cultivation. It is, therefore, necessary to sound a note of warning for the planners of Indian agriculture. Before introducing mechanised cultivation it is necessary to carry on extensive experiments with regard to its effect on soil structure, erosiveness and long term fertility. Short term high yields at the relatively greater cost of future fertility should not be our aim and policy. It should not be inferred from the above discussion that I favour continuation of old methods of

(iii) Work must be immediately provided for lakhs of refugees who have come from Pakistan. This work can be provided best in cottage industries.

Therefore, the cottage industries must be developed in U. P. also. This development can be along two lines:-

(i) The existing cottage industries may be improved and extended.

(ii) New cottage industries, for which the province is suitable, may be created and developed.

In order to accomplish this task we must find out (i) what are the cottage industries existing in the different parts of the province, (ii) what is their position and (iii) what are their difficulties? We must also find out what raw materials are found in the different parts of each Tehsil and what cottage industries can be developed based on those raw materials. In fact, a Tehsil-wise survey is highly desirable with regard to both the existing and possible industries. It is also overdue.

So far as the existing cottage industries are concerned, the cottage industries Sub-committee (U. P., 1946) has examined in general, their position and difficulties. It has suggested remedies too. As regards new industries, no survey has been made as yet. During World War II Syt. L. C. Jain, the then Director of Industries, U.P., had prepared a scheme for the industrial development of the province and had suggested certain new cottage industries.

Definition

Before we describe the main cottage industries of the province, we may distinguish cottage industries from the small scale industries. It is generally said that in a cottage industry only *a few* paid labourers work either in their own homes or in a Karkhana and the total number *of all workers* does not exceed nine. The number is not fixed at ten or more, because then the Factory Act can be applied to a factory employing ten persons. The distinction is not complete. It would be better if instead of limiting the number of paid labourers to "a few", it was put at four.[1] We must also say that cottage industries constitute the main source of livelihood atleast during the period of their working.[2] We can then say whether a production unit belongs to the category of the cottage industry or not. An exception will however have to be made in the case of co-operative industrial production societies, which should be classed under cottage industries if the working capital does not exceed Rs. 5000/-.[1]

It must be clearly borne in mind that it may be possible to produce a commodity on the large scale basis, small scale basis or cottage basis. The distinction between the three classes is made only to separate the smaller production units from others.[3] A list of the main cottage industries of U.P. is given below and the important centres for each industry are noted against each name:—

I—Foodstuffs and Food-processing—

(1) Gur-Meerut and Saharanpur.

(2) Khandsari Sugar-Bareilly, Pilibhit and Agra.

(3) Oil Crushing (Ghani)-Gorakhpur, Shahjahanpur, Meerut, Mathura and Kalpi.

(4) Dairy and Ghee-Etawah, Mainpuri, Shikohabad, Agra, Khurja and Bulandshahr.

II—Textiles—

(5) Handloom Weaving (Silk and Cotton)—Tanda, Gorakhpur, Meerut and Pilkhua.

(6) Printing of Cloth—Farrukhabad, Jahangirabad, Mathura, Tanda, Pilkhua (Meerut) & Lucknow.

(7) Hosiery—Meerut, Agra, and Farrukhabad.

(8) Blanket Weaving and Woollen Goods—Muzaffarnagar, Meerut, lower Mirzapur, Badhoi & Almora.

(9) Tape, Niwar and Net-Meerut and Cawnpore.

(10) Qalin and Duree-Agra, Mirzapur, Shahjahanpur, Meerut, Khairabad (Sitapur), Badhoi, and Bareilly.

III—Leather and Leather Goods—

(11) Tanneries—Saharanpur, Meerut, Cawnpore & Agra.

IV—Wood and Metal—

(12) Wood-carving and carpentry-Nagina, Saharanpur, Amroha (Cholak and Katura) and Banaras.

(13) Furniture-Bareilly, Allahabad.

(14) Stick making-Mussoorie, Rishikesh, Dehradun and Gurukul Kangri (Hardwar).

(15) Brassware—Moradabad, Banaras, Farrukhabad, Hathras, Mirzapur, Oel (Kheri), Ajodhya, Mallawan (Unao), Bindki, Bah & Baraut.

(16) Trunk-making—Allahabad.

(17) Lock-making-Aligarh.

(18) Cutting scissors and Razors-Meerut, Aligarh, Nagina, Najibabad, Bulandshahr (Amarpur).

(19) Hardware (iron)-Hathras, Najibabad, and Mirzapur.

(20) Motorbody, tonga and cart-making-Meerut and Allahabad.

V—Chemicals—

(21) Soap-making—Meerut, Bareilly, Agra, Badshapur, Jaunpur, Lar Road and Allahabad.

(22) Glass industry—Bijnor, Bulandshahr and Firozabad (also Agra, Aligarh and Moradabad for Kachchi phials).

(23) Itars and oils-Jaunpur, Ghazipur, Ballia, and Shikandarapur.

(24) Scented oils-Kanauj, Ghazipur, Lucknow, Banaras, Bahraich, Allahabad and Aligarh (2 centres).

(25) Ayurvedic & Unani medicines-Meerut, Allahabad and Hardwar.

VI—Pottery—

(26) Pottery and toy-making—Chunar, Khurja, Nizamabad, Agra, Lucknow and Bulandshahr.

VII—Cane, Bamboo and Fibre—

(27) Basket and cane furniture-Bareilly, Allahabad and Jhansi.

VIII—Forest Industries—

(28) Shellac—Mirzapur.

IX—Miscellaneous—

(29) Embroidery, Gold-thread and Gota-making-Agra and Banaras.

(30) Paper-making—Kalpi and Mathura.

(31) Biri-making—Jaunpur, Allahabad, Moradabad, Jhansi, Meerut.

(32) Tobacco—Chewing and smoking-Lucknow, Banaras and Jaunpur.

(33) Stone carving-Agra and Mirzapur.

The other important cottage industries of the province are the following.

1. Kattha (Lakhimpur, Gonda, Bahraich, Bareilly and Pilibhit).

1. The suggested limit is arbitrary.

2. A question, which arises at this stage, is whether the period of working should be a minor part of the year or not; and whether it can be a very minor part of the year.

3. There is another distinction. Some industries have been classified by the Economic Programme Committee (A.I.C.C.) as Home industries and these are carried on practically by the family members in their spare time. I would add that the home industries are definitely subsidiary occupations.

griculture or I am against mechanisation. All that has been aimed at is an emphasis on adopting a policy of proper land use instead of transplanting farming systems of the West which were followed in the 19th century or early decades of the 20th and are being discarded now even in these countries. Power machines, to be used in agriculture in India should be suited to our soil, climate and need in order to avoid damage to our land and to save waste of our resources and capital. There appears a sufficient time lag in adopting the latest results of agricultural researches. Even in U.S.A., one crop system of farming, deep, clean and thorough cultivation are giving place to diversified farming, stubble, mulch, ploughing and such other measures as contour ploughing, terracing, strip cropping, and most important of all a planned land use. A scientific classification of land based on capability divides it into the following eight grades.

Land Suited for Cultivation

Class I. Good land which can be safely cultivated with only ordinary good farming methods. Sometimes it may need clearing, drainage, fertilization. Usually little or no erosion.

Class II. Reasonably good land which can be safely cultivated with simple practices. These include contouring, crop rotations, growing protective cover crops, and easy drainage or irrigation operations.

Class III. Reasonably good land which can be cultivated with one or more complex treatments, such as terracing, strip cropping and sometimes drainage or irrigation operations.

Land Suited for Limited Cultivation

Class IV. Moderately good land, best suited to pasture and hay, but can be cultivated occasionally, usually not for more than one year at a time. When ploughed, careful erosion-prevention practices must be used.

Land not Suited for Cultivation

Class V. Useful for grazing or forest with normal practices and protective measures.

Class VI. Suitable for grazing or forest with special practices and protective measures.

Class VII. Suitable for grazing or forestry when used with extreme care to prevent erosion.

Class VIII. Land suitable only for wild life. This land usually is rough, stony, sandy, wet or highly erodible.

The problem brooks no delay in India. We must immediately proceed to classify our land on capability and need basis, prepare detailed land use plan on regional and farm to farm basis. As the individual holdings are small, the land use plans should be prepared on group holdings basis or on village basis excepting large farms. Supply of trained personnel and lack of education among the farmers are two great bottlenecks of the problem but these should not stand in the way if the matter is given the urgency, it deserves. A few projects, to begin with, should be started in areas most affected and gradually it should be extended to other areas, while the new lands brought under the plough should be farmed with due consideration to soil conservation from the very beginning. It requires the services of agricultural engineers, agronomists, agricultural economists and public health planners for contour survey of the land and determination of its proper use. Mere preparation of the plan will not do but it should be the job of development workers and special conservation staff to see that the farmer is fully educated about the plan and its usefulness and the farming system is adopted to the plan. Even legislative force, if needed, should be availed of. The state should extend all help in matter of technical advice and finance to the farmers to adopt the new measures

necessary for soil conservation farming. The agricultural economist who has hitherto been ignored must be asked to prepare detailed statement of financial aspects of farming according to land-use plan and must continuously watch the results, analyse them and make it known to the farmer and the state how the conservation system of farming as against the wasteful methods of farming is adding to farm income, well-being of the farm population and thereby to national prosperity as a whole. If this aspect is not well cared for the scheme may not make much head way because ultimately the farmer has to be convinced that it pays him to plan land use and follow the conservation cropping scheme.

Those, who fear that soil conservation farming and planned land use would affect adversely the immediate production targets as some land at present used for growing crops may have to be set apart for grasses and tree plantation and, therefore, it can be taken up only as a long term plan after the present emergency is over, should know that even reduced acreage under crops would more than compensate for the loss of total yield by higher yields. As a result of soil conservation farming in U. S. A. the yields have gone up by 25 to 400% and such fears that total production would decrease have been proved to be unfounded.

The methods so far followed for increasing production i. e. subsidy to individuals for wells, bunds, compost-pits, distribution of improved seed, sanai seed, manure etc., free, subsidised or on loan on individualistic basis, are not enough to meet the needs of the situation. In the words of F. L. Brayne, slow death is creeping on us. It is said that God never made deserts but they are there through the follies of man. An estimate by the Government Forest Research Institute, Dehradun, shows that approximately 300 sq. miles of fertile land are being converted into desert every year. How long can we sit hopelessly watching on the fence. We must fight the menace with all our strength and stop any further abuse of our land by planning its use properly. We must SAVE OUR SOIL or perish.

COTTAGE INDUSTRIES IN UNITED PROVINCES

By : MAHESH CHAND

THE Indian National Congress as also the Government of India have recently decided to develop the Cottage Industries definitely. The main reasons generally given are as follows:—

(i) It leads to more employment, particularly in our country.

(ii) It shall mean provision of work in the widely distributed villages of India.

(iii) It shall enable us to utilise the local resources and plan for self-sufficiency in the villages.

Besides, there are the following reasons of recent origin:—

(i) In order to reduce the prices and the scarcity of goods, we must immediately produce whatever we can and in any manner possible.

(ii) Owing to the disturbed political situation in the world and the scarcity of the foreign currency to pay for imported goods, it is not likely that we will succeed in importing capital goods. Hence, large scale industrial development will be very slow for sometime.

2. Borax (Ramnagar).
3. Honey (Jhansi and eastern hilly Districts).
4. Tat patties, ropes and Mundhas (Eastern Districts).
5. Saltpetre (Farrukhabad and Mathura.
6. Cane-making (Agra, Hathras, Khurja, Etawah, Shikohabad and Allahabad).
7 Glue (Cawnpore).

Foodstuffs

Turning to the position in these industries, 65% of the sugarcane is converted into Gur while only 18% is converted into sugar. It is exported to all parts of the country. In order to benefit the cultivators it is necessary that the supply of crushers and pans be organised on the co-operative basis. Co-operative marketing of Gur will also be beneficial. There should also be a propaganda about the better nutritious quality of Gur.

The ghee industry is more important than the gur industry. About 20 lakh maunds of ghee are produced per year but there is the difficulty of transport as also the evil of adulteration. The slaughter of milch cattle during the world war II has given a great a set back to the industry.

The oil-crushing industry which is found in every well-sized village, faces two problems. Improved kolhu (ghani) should be popularized through demonstration and their supply should be arranged on the co-operative basis. Pure and edible oil should be sold in sealed containers through co-operative societies.

Textiles

Among the textile products, spinning is practised little in comparison to weaving. For cotton textiles, hand-looms are mostly used. Before the war it provided employment for over five lakh persons who used about 52 million pounds of yarn and produced 50 crore yards of cloth every year. The greatest problem is with regard to the supply of yarn and dyes. The handloom weaver is completely at the mercy of the middleman. It is hightime that co-operative societies should be organized to save the weavers. Over 5000 persons are engaged in hand printing of curtains, bedsheets, lihafs, sarees and fards. Mathura is noted for its Ramnami prints and Tanda for printing cloth for the Nepal market. The annual production amounts to about 1.5 crores of rupees.

In the case of cotton textiles about one-fifth of the yarn was imported, and for silk-weaving most of the yarn was imported from Japan. It gives employment to 1.4 lakh workers who use about 55000 looms to produce 18 crore yards of cloth valued at Rs. 9.5 crores annually. Although it is considered possible to rear silk worms in the province, nothing has been seriously done by the government in this regard. Mubarakpur is known for its Shaltas and Banaras for its Kashi silk products.

However, most of the yarn used for woollen products is handspun, though the process can be improved. About 97000 men are engaged in the industry. More than three million yards of woollen fabrics are produced, particularly blankets and carpets. The latter is mostly exported. A superior carpet may be sold at Rs. 120 per square yard. Due to the scope for high profits there is a rush of producers of carpets and it is urgently necessary that the state should exercise control so that the quality does not go down. It is regrettable that during the war the Industries Department allowed the co-operative societies of wollen workers to decay and die. The Department of Industries did not leave behind any permanent result of its good work in respect of blankets.

Hosiery produce have similarly been started during the last war. They also require to be supplied with small power machines.

Leather Goods

Leather is another important industry. About half of our hides and skins are exported and one-fourth of these come from U. P. Low prices are secured on account of bad flaying and curing. Although U. P. has plenty of babul bark hides and skins are not properly tanned. Inspite of the recommendations of the Hides Cess Committee (1928) and the fact that the depressed classes would benefit most, little has been done to develop the industry. The Industries Department had launched a scheme to develop village and small scale tanning, but it has been given up. The patent leather industry of Agra also suffers from lack of proper technical guidance. With a world shortage of labour it is urgently desirable that demonstration tanneries be organized in which workers may be organised on a co-operative basis.

U. P. is not famous for its leather goods, footwear, suitcases and other travelling requisites, harness and saddlery. Very large quantities of footwear are exported to other provinces. Leather goods worth Rs. 8 crores are produced in the province every year. It means work for 1.5 lakh persons of whom 50,000 are at Agra, 27,000 at Lucknow and 20,000 at Kanpur. The industry badly needs improvement in wasteful methods and joint working both for production and distribution. Co-operative principles can be utilised at once for distribution purposes.

Wood Work

Bareilly is known for every variety of furniture: Saharanpur and Nagina for carved articles. The World War II helped the wood industry tremendously. An idea can be got from the fact that the annual output at Bareilly increased from Rs. 3½ lakhs pre-war to Rs. 20 lakhs during the war. At Saharanpur it has increased from Rs. 80,000 to Rs. 1.5 lakhs. The carved woods and goods with brass inlay work from Saharanpur have found a ready market in Europe and America. These include partition screens, tables, cigarette and cigar boxes, trays, big tables etc. The number of workers at Saharanpur is about 300 only and their earnings have gone up three fold. The closing of imports has given an impetus to the wooden toy-making also. It is mostly confined to Dehradun and Lucknow. It requires re-organisation, cheap paints and designs. Mention may also be made of the beds from Najibabad, Hapur and Tilhar and of lacquered legs of beds from Lucknow and Amroha.

Metal-work

Cawnpore, Agra, Bareilly and Ghaziabad have many small workshops making agricultural tools and implements for sale to villagers. At Meerut about 100 dozens of scissors are produced daily. So too knives are produced at Hathras. At both places there is a necessity for improved heat treatment. Better knives would be produced if electric grinding machines and power punches are used. The locks from Aligarh are famous for durability and security value, but the industry badly requires proper organisation and guidance. This would improve and increase the output 20-30 times. During the World War II, while the contractors failed to supply more than 10,000 locks per month, an organisation set up by the Industries Department produced 2,60,000 locks per month in 1943.

Brass and copper wares upto the value of about Rs. 3 crores are produced annually. Two-thirds of this production is concentrated in Moradabad, Mirzapur and Farrukhabad. Ornamental brasswares of Moradabad and Banaras are produced by about 5000 artisans and valued at Rs. 30 lakhs. Most of it is exported. Some villages are famous for the domestic utensils and they do con-

siderable trade with markets all over India. Moradabad is also famous for German-silver and electro-plated wares like tea-sets, service-sets, forks and spoons. During the war the production of brass-wire has been organised on the cottage basis at Aligarh and Banaras. Some gold-thread making concerns are making insulated copper wire for electrical purposes.

An important industry of Banaras is that of gold-thread making which provides employment for 9000 persons. Gold thread of the value of Rs. 70,000 are produced daily. It weighs about 30,000 tolas. One of the important difficulties is the non-availability of cotton yarn of required fineness and quality.

Chemicals

500 cottage-concerns in the districts of Aligarh, Agra, Moradabad and Bijnor produce bottles, small phials for scents, ganga jalies and *Kachchi shishies*. Before the war U.P. produced Re. 1 crore worth of glass-ware out of a total Indian production valued at Rs. 1.2 crores. Firozabad supplies 80% of our demand for churies. They have copied Japanese and Czechoslovakian designs. They are using even liquid gold to produce decorated bangles. The problems before the industry are short supplies of fuel, kerosene oil and transport difficulties. In order to give relief to the bangle joiners, it is desirable to supply them with gas. At present they burn Kerosene oil. There is a dearth of roller workers also and it is necessary that selected workers should be sent for training to Japan. Besides, the industry should be organised on a cooperative basis, otherwise there is danger of cut-throat competition in the near future.

Although about 1,00,000 maunds of soap were manufactured before the war, the industry suffered badly. There is a large scope for soap-making much larger if villagers be made soap-minded.

Borax is imported into India from Tibet and refined at Ramnagar (Dist, Naini Tal). Before the war this amounted only to 5000 maunds, while about 25 thousand tons were imported. The Indian borax could not compete with the foreign borax. Transport cost must be reduced to encourage the internal position.

Jaunpur, Ghazipur, Kanauj and Aligarh are famous for perfumes and oils, but the industry suffers from cut-throat competition, lack of scientific knowledge and adulteration.

There are many other chemical industries such as synthetic resins, plastics, pigments, starch, active carbons, disinfectants which can be produced inside the province. But the state must control the industry, establish laboratories to which problems can be referred by the common business man, and grant better transport facilities.

Ceramics

U. P. does not have any large ceramic industry. The Chunar pottery is really ordinary clay pottery and is mainly sold at the railway station of Chunar, Moghalsarai, Banaras and Allahabad. The Nizamabad pottery is very fragile and merely for show. The Khurja pottery is better known as Delhi pottery. It has improved during recent years. During the war the Industries Department organised the potters of Khurja successfully.

Paper

A good opportunity to develop the hand-made paper industry was lost during the last war. The Industries Department has planned to establish training centres and research institute, but in vain. An attempt to produce packing and writing paper was made during the war but it is not encouraging for peace. The stable peace time demand arises for wrapping gold and silver articles, sweets and condiments at Agra and also for making Tazia.

Difficulties

Eight difficulties, common to all cottage industries, may be noted:–

(i) Supply of adequate raw materials of good quality and at reasonable prices.
(ii) Supply of finance.
(iii) Technical improvements.
(iv) Designs and standardisation.
(v) Difficulties in finishing.
(vi) Marketing and distribution.
(vii) Taxation and transport.
(viii) Supply of power.

The cottage worker cannot stock materials. He cannot compete with exporting agents who purchase oil-seeds, hides and skins in a lot. His products are known to be better and more durable but he is losing this reputation because he does not get the right quality and quantity of yarn, steel, brass and other metal sheets and ingots. The dealers from whom he gets his materials is not interested in his trade and cannot take a long period view of his business. The dealer sells to him low quality goods by giving it fancy, popular and trade names and for high prices. In the case of handlooms, mills pass their rejected stuff for sale to the weavers. High prices and low quality unduly lower the competing power of the cottage worker. The solution lies partly in drastic legislation and partly in the organisation of co-operative supply societies.

Another serious drawback is the lack of financial facilities. The worker's real asset is his labour and his personal credit. The Mahajan who supplies finance, does not attach much value to his credit. Hence the rate of interest is unduly high and not infreqently the cottage worker has to promise to sell his finished products to the Mahajan at very low prices. Better financial facilities would enable the worker to wait till he could get better prices. The co-operative supply society can undertake this function also. Failing them, the government should arrange for the provision of finance through an independent industrial finance organisation. Initially the state may grant a lump sum say Rs. 5 crores for developing the cottage industries.

The cottage worker is conservative in adopting new methods and his industry suffers from technical improvements. The reason for his conservatism is his poverty. He cannot afford new experiments. The last war has shown that workers are willing to take to new methods and prepare articles according to the prescribed standard. There is lack of technical education and demonstration. There must also be a research institute for the purpose. The government experts do not have a knowledge of all details. They do not mix with the workers and talk in their language. This attitude must go. Also facilities must be provided for the adoption of the improved methods of appliances and technique.

Apart from technical improvement the cottage product is not of the design and standard which are preferred by the consumers. This is because there is no organisation which may educate the producers in new designs and how to make them. The function could have been taken up by the dealers who purchase the cottage products or who supply the materials. Some Banaras dealers do extend such facility to their weavers. Others particularly in the brass-ware industry of Moradabad, have copied the western designs without caring about the shape and the size of the product: as a result the quality of work has gone down. This is wrong. There is much in traditional oriental designs and we should not hasten to destroy them. Partly the deterioration in design by the workers is due to the tendency to make it cheaper. In the case of handlooms, it is due to the Sahukar who offers a lower price every time the product of the same design is offered to him.

The cottage products do not have a good finish, which unfortunately has come to be valued by the public. A good finish requires that certain processes should be done correctly by machines or special appliances to assist the hand-work. If the industry be localised, enterprising parties can combine to instal finishing appliances e.g. calendering plant at Tanda and Mau, leather finishing plant at Cawnpore and die punching and pressing plants at Aligarh. The government must organise the workers so that they may have this facility. If industrial co-operative be formed on a commodity basis, the finishing operation can be undertaken by their federations.

The markets for the cottage products are also limited. In many cases the worker is under promise to sell it to the dealer at a low price. In others the product is not known to the consumers. Also the producer does not know where his product can be sold for a better price. Besides he does not have the transport facilities available to the large producers. The solution lies in advertisement and propaganda by the government. The U.P. government is maintaining Handicraft emporiums at about half a dozen places. These should be increased. Besides the foreign markets should be studied and Indian cottage products published through the Indian Trade Commissioners.

The railways should be made to offer better facilities and lower rates to the small scale and cottage producer. Besides, the municipalities and district Boards should be forced to revise their octroi and other local duties which raise the price and limit the competing power of the cottage producer. The Government of India levies certain import duties to protect the large scale producer. In doing so, they must take into account the effect of their action on the cottage industries.

Power

India has a short supply of coal and oil and the cottage worker claims to have a fair share of these two sources of power. India's future in general, and that of the cottage worker in particular, depends on the development and supply of hydro-electricity for which we have ample resources. Hydel power at 110 volts and 220 volts (and not 220 volts and 440 volts) should be supplied. The rates charged for cottage industries should not exceed 9 pies per unit. It is not quite correct to argue that village houses are not suitable for electric connection, or that electricity cannot be distributed in the rural areas.

State Aid

It is essential that a separate department be created in each province to look after the development of the cottage industries. This has already been done in U. P. though it is not known to be making satisfactory progress. The Department must start to make an industrial survey of each district with a view to find out what cottage industries can be developed there. It should also maintain a good library, a laboratory and a workshop under a Research and Education section which should arrange for a continuous contact between technical institutes and workers. The Department should be responsible for publicity of cottage products also.

Besides cottage industries should be organised on the co-operative basis. Thereafter it should be looked after by the Cottage Industries Department so far as the technical matters are concerned. In U. P. the attention may be first paid to textiles, leather and metal industries.

There should be an Advisory Board to help the Director of the cottage industries.

The provincial government should provide a lump sum of atleast Rs. 5 crores to help the initial development of cottage industries. Further monetary facilities should be secured from the Reserve Bank of India and the provincial co-operative banks through the district and primary societies.

The Government of India must demarcate the fields for large scale industries which compete with cottage industries so that the competition may change into complimentary and supplementary production. This is specially important in the case of textiles.

INDIA IS RURAL

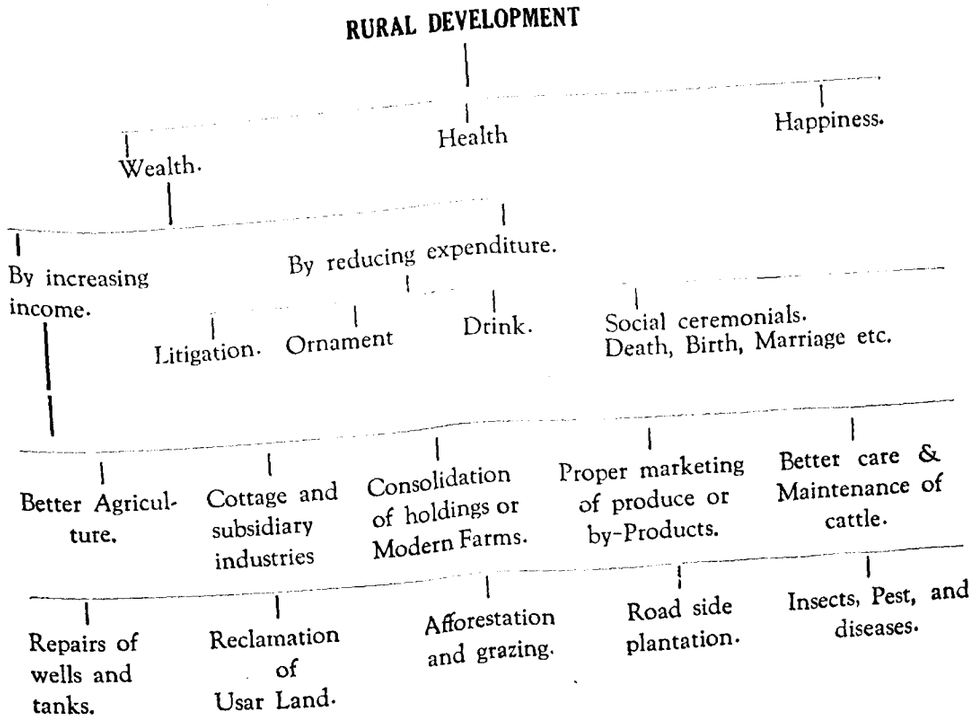
By : R. K. SINGH PARODA

(Concluded from June–July issue)

How to take up Rural Development

I have already said that during the period of Foreign rule the policy of 'look above and kick below' has been adopted and only half hearted attempts were made after every ten years, towards the amelioration of the suffering masses in the rural areas. So far only the leaves have been watered and not the roots. During the course of my tour I have seen that at many places people belonging to certain group or party come to villages to do some rural development work. They withdraw their activities as soon as their party purpose is served. The so-ealled well-wishers start coaching in the villages, and the village people are made to copy city life. The villagers therefore remain always confused and looked to every programme prepared by the town people with great suspicion.

However, there cannot be two opinions that our villagers are very poor but in my opinion "poverty of money is not so bad as poverty of thought". We must therefore eradicate the latter first and the former will automatically take care of itself. Every man and woman want health, wealth and happiness and to achieve these should be the goal of our National Programme. How this is possible may be seen in a nut-shell below :—



Health

Village as one Unit.

1. Separate cattle sheds.
2. Manure pits.
3. Soket pits.
4. Rat killing.
5. Child welfare.
6. Proper supply of Medicines.
7. First aid.
8. Wells.
9. Control of epidemics.
   - Cleaning
   - Creation of parapets.
   - Permanganating.

House.

1. Ventilation.
2. White washing or cow dunging of houses.
3. Cleaning of houses, and its surroundings.
4. Taking out in the sun of Bedding etc.
5. Care of babies.
6. Directions about keeping drinking water and food very clean.
7. Domestic Training.
8. Gardening.
9. Prizes for best clean home and boys and girls.
10. Decent latrines.

Personal.

1. Cleaning of face, teeth and eyes.
2. Vaccination.
3. Inoculation.
4. Simple rules about health.
   (a) Drink pure and Fresh water.
   (b) Breathe Plenty of fresh air.
   (c) Take Nutritious Food.
   (d) Take bath and keep clean.
   (e) Little exercise.

Happiness

Education.

1. School for boys and girls.
2. Night school for adults.
3. Ruralisation of village curriculum.
4. Dramas in schools.
5. Village Libraries.
6. Village Newspaper.
7. Lectures.
8. Posters.
9. Slogans.

Games.

- School Boys.
  1. Scouting.
  2. Indian games.
  3. School sports races, Tug-of-War
  4. English games Hockey, football Volleyball etc.
- Adults.
  1. Indian games Kabbaddi.
  2. Dangals Wrestling
  3. Physical exercise, Dand Baithak, Pata etc.
- Old.
  - Walking

Entertainments.

1. Exhibition.
   (a) Visits of R.D. vans.
   (b) Bullock carts exhibitions in remote villages.
   (c) On Fairs and Special occasions.
2. Bhajan Mandalies.
3. Gramaphones.
4. Magic lantern.
5. Nautanki shows.
6. Dramas.
7. Broadcasting,
8. Baby shows.
9. Epidiascope
10. Radio.
11. Competition for pleasure, children, adults and women in mending clothes, cooking, first aid etc.

Agencies.

Official.

1. Revenue Staff.
2. Agriculture.
3. Cooperative.
4. Education.
5. Health.
6. Medical.
7. Irrigation.
8. Court-of-Wards.
9. Publicity.
10. Forest.
11. Veterinary.
12. Industries.
13. Marketing.

Quasi Official.

1. Panchayats.
2. District Boards.
3. Publicity Organisation of rural bodies.
4. Red Cross.
5. Rural Development Societies and Better living.

Non-Official.

1. Kisan and Mazdoor Sabha
2. Zamindar-Association.
3. Istimurardars Association
4. Individual e.g. College students, Zamindar, Vakils, Doctors, Vaids, Hakims, Retired Govt. Officials, Officer interested, Rural guides, or guards, recruited from among villagers themselves.

There are many advisers at the centre for different Ministries but there is none for Rural Development. Unless there is one Rural Development Commissioner, the above agencies will continue to function independently as hitherto and achieving little or no success.

DIVISION OF WORK

It is very essential therefore to initiate, organise and take up Rural Development work in right earnest in every Province after conducting the necessary village survey. Many people feel that it would have been better if the entire expenditure spent so far on these so called temporary Technical Departments and for their technical experts and heads during the reign of foreign rule, would have been distributed among the poorest cultivators. People say that experts are only excellent people. Their presence is essential at a secondary stage of development and their high sounding degrees are not required at all in doing the spade work. Moreover, their experience cannot be applied in case of our poor peasantry because our conditions are very much opposed to those of the western countries. One, therefore, has to admit that mere microscopic analysis, long thesis and big theories may hardly improve matters in our villages. What is desired is that the National Government should now take up Rural Development drive in some of its selected zones to begin with and then tighten up the working with the enforcement of State laws. By doing so the working energy and money will not be wasted.

There should also be a powerful controlling authority at the centre to coordinate and accelerate the work of the agencies mentioned above. The central organisation should expand its activities from village to village. Unless a villager is made to believe that "*East or West, but his home is the best*" neither government nor any organisation will be able to complete the rural service. No matter however great our cities may grow, however rich or powerful these citizens may become but the muddy huts in our naked villages are bound to expose the part played by our State or its public servants who have so far proved only technical for making big experiments in laboratories with ageold city outlook and conservatism in their dealings. However great and rich in its natural resources a country may be but this is immaterial if the majority of its population have no education or organising capacity to improve their lot.

We should not only import, and adopt ideas but we must also originate and apply our heads for the solution of our rural problems, with which the future of Independent India is vitally concerned.

It is necessary also to divide the work of Rural Development under the following main four heads:–

1–Rural Reconstruction work :—All types of construction and reconstruction work both inside and outside the village will fall under this head. It will include:–

a) Improvement in communication and intervillage communications, i. e. village approaches, feeders etc.
b) Sanitary wells for drinking purposes.
c) Drains, lanes, and socket pits.
d) Construction of Panchayatghars and women welfare centres.
e) Provision for bath room and latrines.
f) Lighting poles and ventilators.
g) Widening of village foot-paths.
h) Plantation, hedging and fencing.
i) Levelling up and levelling down inside and outside the village, and
j) Other such work of public utility.

2–Rural Uplift work:— To uplift the masses through revolution of thoughts in their social, cultural and religious life both by teaching and preaching with a view to generate the spirit of confidence, self respect, self-help and thus to direct their minds towards education, health, wealth, happiness, truthfulness, discipline and cooperation by intensive and extensive publicity and propaganda. This will be aimed at, to make every man a better citizen and every woman better fitted for domestic life as wife, mother and keeper of the home. This will be done through the organisation of "Dehat Sudhar Committees", "Gram Sewaks" and "Sevika Dals", "Bal Sewaks," Women Welfare activities and clubs etc.

3 Rural Recreation work:–All necessary village amenities to make the village life enjoyable and attractive i. e. through lectures, lanterns, slides, cinemas, dramas, films, projectors, models, charts, maps, propaganda vans, etc., teaching of physical culture, first aid, tournaments, village competitions, shields, sanads, will fall under this head.

4 Rural Relief work:–To make the village and the villager self-supporting as well as to make use of all measures necessary to check the erosion of soil in the villages. This will be done through:–

1) Cottage and subsidiary Industries.
2) Village Panchayats
3) Raising of village funds.
4) Checking of soil erosion.
5) Reclamation of USAR and waste land.
6) Minimising the social evils such as wasteful expenditure in Nukta, marriages etc.
7) Settlement of the criminal tribes.
8) Consolidation of holdings and crops.
9) Better living societies.
10) Village gardening.
11) Protection of beneficial trees, animals, birds etc.
12) Relief laws pertaining to regulation of Markets, Measures etc.

GROWTH OF LANDLESS CLASS IN U. P.

By : SHRIDHAR MISRA

Plea for Rural Labour

Generally the term 'Labour' is used in a very restricted sense. It is applied only in relation to factory workers, whose number is not as large as that of even agricultural labourers, who are the bulk of all rural labourers. In 1931 the number of agricultural labourers was 3,14,80,219 while the number of industrial workers was 1,53,61,933 i.e. about one-third of the number of agricultural workers. In the U.P. in the same year, there were 27 lakhs industrial workers and 40 lakhs agricultural labourers out of nearly 5 crores, the total population. Thus agricultural labourers formed 8% of the total population or 16% of all earners and dependents, while industrial workers were only 5% of the total population or 11% of all earners and working dependents.

Besides their being in an overwhelming majority, the case of Rural Labourers deserves greater attention also because the problems of life and work are more complex in villages than in urban areas. Further, very little or practically nothing has been done even to make a sincere study of the manifold rural socio-economic problems.

Neglect of Rural Economics

The study of Rural Economics has been almost a neglected subject. Dr. Radha Kamal Mukerji drew pointed attention of all concerned towards this great drawback as early as 1926 and wrote, "a study of Economics which neglects the history of agriculture and the transformation of rural economy cannot but be partial and incomplete."[1] The above defect in the study of Rural Economics remains even today and the paucity of factual data and other material information relating to rural conditions of life and labour is the greatest impediment in the way of any scientific study of village problems. Under such circumstances, the innumerable difficulties that an investigator has to face can easily be visualised. Nevertheless, the task of making a serious study of the manifold problems of Rural Labour is of paramount importance; and, therefore, the sooner it is done, the better it is. It is with this object in view that the present study has been made despite all difficulties, discouragement and deficiency of data.

Definition of Rural Labour

"Rural Labour" for purposes of this study means all workers in rural areas, skilled as well as unskilled, who work for wages paid in cash or kind, holding seasonal or permanent employment of whatever kind, agricultural or non-agricultural and may or may not own land for cultivation on their own account.

Classes of Rural Labour

All rural workers can be broadly grouped into two classes :

(1) Skilled workers—including carpenters, blacksmiths, weavers, potters, oil-pressers, and a host of others engaged in small village industries, which they continue to persue as their traditional caste profession either as primary or subsidiary occupation.

(2) Unskilled workers—including mostly agricultural labourers, working on daily or monthly wage system. There are also general

1. Dr. Radha Kamal Mukerji: The Rural Economy of India (1926) P 1.

labourers employed for odd jobs such as repairing of houses, thatching, load carrying, carting, wood-cutting and cattle tending etc. Further, there are coolies working at rural railway stations, who very often combine this type of work with agriculture as subsidiary or primary occupation.

The Landless Class

The above division of rural workers made according to their skill cannot, however, be followed strictly when considering the nature of work done by all such workers. In that case practically all will have to be treated as agricultural workers for 'land' is regarded to be of the most important value in the village economy and, therefore, even "a non-agricultural caste is largely agricultural at bottom"[2]. But due to keen competition for possession of land, it could be obtained only after paying a heavy price and other exactions in the form of Nazarana etc. Gradually growing poverty compelled many small farmers to borrow money against their small holding of land on exorbitantly high rates of interest, which they could never pay. Under such conditions "millions of peasants who were unable to meet these exactions lost their land to the landlord or the usurers and because India was not permitted industrialisation were compelled to remain in the village as unpaid labourers"[3] or landless labourers.

In addition there are those who have insufficient land for their maintenance and are, therefore, compelled to work on other's farms during the busy season. Thus the case of small cultivators and tenants is no better than that of landless labourers. For a similar reason the fate of skilled labourers also cannot be regarded as completely satisfactory. They too are obliged to work as agricultural or general labourers in order to supplement their tiny earnings from traditional calling which have gradually fallen on evil days or have totally languished in the face of competition from organised urban industries.

Growth of Population in U. P.

We now turn our special attention to the U. P. of Agra and Oudh, which consist of 48 districts extending over an area of about 106 thousand square miles. The total population grew from 4.73 crores in 1901 to 5.50 crores in 1941 showing an increase of nearly 16%. The density of population increased from 445 to 518 persons per sq. mile and the agricultural population recorded an increase of nearly 13% during the same period. As natural conditions are not the same over the whole province, the distribution of population is not uniform. According to the Census of 1941 the Rural population varies from 81.9 per cent in the Sub-Himalaya west[4] to 95.8 per cent in the Sub-Himalaya East[5]. The Percentage of rural population for the whole province was 87.4. Similarly the total density was the lowest (124) in Himalaya west and was highest (879) in the Indo-Gangetic Plain East against 518 persons per sq. mile for the whole province[6].

To have a comparative idea of other natural regions, the following figures are given[7].

2. S.S. Nehru: Caste and Credit (1932.)
3. Andrew Roth: 'Why India Starves'——A. B. Patrika, Sept. 14, 1947.
4. It includes Shaharanpur, Bareilly, Bijnor, Pilibhit & Kheri.
5. It includes Gorakhapur, Basti, Gonda. & Bahraich.
6. Himalaya West includes Dehradun, Nainital, Almorha, & Garhwal. Indo-Gangetic Plain East includes Banaras, Jaunpur, Gazipur, Ballia and Azamgarh.
7. The figures are based on the U. P. Census Report, 1941.

GROWTH OF LANDLESS CLASS IN U. P.

Natural Division.	Area Sq. Miles (Thousands)	Population (Lakhs)	Density	Rural Pop. Lakhs	% of Rural to total Pop.	Rural Density
U. P.	106.2	550.2	518	481.6	87.4	455
Himalaya West	14.9	18.5	124	16.5	89.7	110
Sub-Himalaya West	9.9	47.8	482	39.1	81.9	391
Indo-Gangetic Plain West[8]	23.9	150.5	630	124.9	82.6	520
,, ,, ,, Central[9]	22.4	143.1	638	125.3	87.4	569
Central India Plateau[10]	10.6	25.5	242	22.2	87.1	222
East Satpuras[11]	4.3	9.0	208	8.0	88.9	201
Sub-Himalaya East	12.8	91.1	710	87.2	95.8	670
Indo-Gang. Pl. East	7.4	64.7	879	58.2	90.1	726

Thus it will be seen from the above table that the pressure of rural population is the highest in the Eastern zone. During the last two decades the following changes were noticed in these natural regions in respect of rural population:—

Region	Density of Rural Population 1941	1931	1921
United Provinces	455	407	382
Himalaya West	110	101	92
Sub-Himalaya West	391	374	341
Indo-Gangetic Plain West	520	459	420
Do Central	569	504	477
Do East	726	686	648
Central India Plateau	222	189	175
East Satpuras	201	162	148
Sub-Himalaya East	670	624	584

Region.	Variation increase in Density of population per sq. mile 1921-31	between 1931-41	1921-41
Himalaya West	9	9	18
Sub-Himalaya West	33	17	50
Indo-Gangetic Plain West	29	61	90
Do Central	27	65	92
Do East	38	40	78
Central India Plateau	14	33	47
East Satpuras	14	39	53
Sub-Himalaya East	40	46	86

8. It Includes Muzaffarnagar, Meerut, Bulandshahr, Shahjahanpur, Farrukhabad and Etawah.
9. It includes Cawnpore, Fatehpur, Allahabad, Lucknow, Unao, Rai Bareilly, Sitapur, Hardoi, Fyzabad Sultanpur, Partabgarh and Barabanki.
10. It includes Jhansi, Jalaun, Hamirpur, and Banda.
11. It includes Mirzapur.

Thus these natural divisions arranged on the basis of net variations in density of total and Rural population during 1921–41 and for the percentage of rural population to total population in 1941 would appear in the following order :–

Order for variation during 1921-41

Region	Total pop.	% of Rural pop. 1941	Density of Rural pop.
Himalaya West	VIII	III	VIII
Sub-Himalaya West	V	VIII	VI
Indo-Gang-pl. West	II	VII	II
Do Central	III	V	I
Do East	I	II	IV
East Satpuras	VII	IV	V
Central India Plateau	VI	VI	VII
Sub-Himalaya East	IV	I	III

Growth of Agricultural Population

A perusal of the foregoing tables will show that the density of total population increased by 91, and that for rural population increased by 73. This growth of rural population led to increase in the population dependent upon agriculture which rose from 76% in 1921 to 78% in 1941. In fact the World War II had greatly prevented the increasing population from falling back upon agriculture by opening new and more lucrative avenues of employment in cities; otherwise the dependence of population upon agriculture during the present century has been equal to nearly 20%. This is shown by the following figures:

Year	Population dependent upon agriculture
1941	78.2 Percent.
1931	79.3 %
1921	76.4 %
1911	71.7 %
1901	65.2 %

Fractionalisation of Holdings

Steadily increasing pressure of population caused severe competition for land which resulted in the sub-division and fragmentation of agricultural holdings and ultimately in the emergence of a new class of landless labourers. In the sub-montane tract the average size of the holding ranged from 4.0 acres in Basti to 6.8 acres in Kheri; in the Upper Doab from 6.7 acres in Moradabad to 11.5 in Muzaffarnagar; in the Central Doab from 4.5 acres in Rai Bareilly to 6.6 acres in Fatehpur; in the Eastern Doab from 3.4 in Azamgarh to 5.7 acres in Allahabad; and in the Trans-Jamna tract from 5.0 acres in Mirzapur to 12.4 acres in Jalaun [12].

Emergence and Growth of Landless Class

Those who could not procure any amount of land were reduced to the position of landless labourers. The number of such labourers has gradually increased. It was 171 per mille of total agriculturists in 1911 and rose to 192 in 1931. The actual number of workers today cannot be less than 40 lakhs even after taking into consideration the effects of the World War II. The largest number of agricultural labourers occurs in the Bundelkhand, where for every 100 landlords and tenants there are 54 labourers. Next comes the Eastern group of districts. The figure of agricultural labourers is the lowest for the Himalayan zone. This is obvious from the following table showing the number per mille of earners and working dependents in 1931.

Area	Landlords	Tenants	Ag. Labrs.	Lab. for every 100 landlords and tenants.
Himalayan	642	253	11	1
Eastern	66	517	176	30
Western & Central	63	445	105	21
Bundelkhand	65	390	241	54

12. Report of the Agricultural Reorganisation Committee, U. P. (1939–41) P. 107.
(In Bansi, Domariyaganj, district Basti, the plots are found to be so small as from 20 to 30 sq. feet. (S. N. A. Japi; Landlords & Tenants. History and States of–in U. P. (1931) P. 77.
In a dozen villages in Manjhanpur Tahsil, district Allahabad, there were found out in 1940, 19 plots which measured .03 acres, & one plot which measured .01 Acre–Shridhar Misra: Agricultural Holdings in Alld. Dist. (1944).

Predominance of labourers in Bundelkhand is due to peculiar natural conditions of land which render most of the area uncultivable and also because of the most primitive and least migratory nature of inhabitants, who stick to their native land despite acute poverty and would not like to go any where else to earn their livelihood.

In the Himalayan tract people are more hardworking and least influenced by so called modern civilisation and aristocracy. The tract is mostly rural; so people prefer to do their work themselves and do not employ labourers and that is why the proportion of labourers is the lowest even though the number of landlords is the greatest. In the Eastern zone, absence of any major industries is the chief cause responsible for predominance of labourers. Except for Banaras, other districts are not even properly urbanised. In the Western and Central zone presence of major industries has greatly mitigated all risks for increased population to fall back upon agriculture.

Its Causes

After having shown the slow but steady increase in the growth of landless class, we shall now attempt to locate the causes responsible for it. The well-known Indian Economist Dr. Radha Kamal Mukerji has well summarised the position in one sentence, which may be quoted here: "Every circumstance, which has weakened the economic position of the small holder, has increased the supply of agricultural labourers–the loss of common rights in the rural economy, the disuse of collective enterprise, the subdivision of holdings, the multiplication of rent receivers, free mortgaging and transfer of land, and the decline of cottage industries". [13]

The greatest increase of nearly 36% in the number of agricultural labourers was witnessed during the decade 1921–31. The preceding as well as the succeeding decades were both unusual, being characterised by war; which had a relieving effect upon land. Falling economic position due to depressing prices forced many a small agriculturists to borrow money on mortgage or sale of their land. "Certain agricultural classes, notably Rajputs and Muslims, parted with a considerable area of land during the decade and this process must have been accelerated by the adverse seasons and fall in prices at the close thereof. The cause in most cases was their indebtedness. Of this land about 60% has passed into the hands of non-agriculturists" [14].

Dispossession of land in favour of moneyed classes coupled with decay of village vocations aggravated the position of petty cultivators and village artisans, who were thus driven by force of events to work as serf-labourers in the fields of their creditors. "Many rural workers have been compelled to abandon their traditional occupation and have now taken to agriculture" [15], either as cultivators or labourers.

Transitional Economy & Its Effects

Break up of the village solidarity with the advent of Br. rule marked the end of self-sufficiency nature of an Indian village. Cash economy replaced barter and status and custom yielded to competition and contract. Improved transport facilities poured into the village cheap and more attractive articles manufactured in factory industries. The poor artisans could no longer withstand their fierce competition. Sonars (Goldsmiths), Barhais (Carpenters), Telis (Oil-men), Julahas (weavers), Kumbars (Potters), Lohars (Iron-smiths) were all adversely affected. The number of workers who returned their traditional caste occupation as principal occupation declined in 1931. The following figures bear testimony to this statement :—

13. Dr. Radha Kamal Mukerji : Land Problems of India (1933).
14. U. P. Census Report (1931) P. 47. 15. Nanawati & Anjaria : The Indian Rural Problem (1945)

Caste	Number per mille of workers who returned their traditional caste occupation as principal occupation.		Variation
	1931	1921	1921–31
Sonar	654	740	86
Barhai	403	415	13
Teli	408	436	28
Julaha	428	505	77
Kumbar	365	432	67
Lohar	313	318	5

Goldsmiths, weavers and potters were comparatively more adversely affected by this transition. Among the caste trading classes Halwais suffered the most. In 1921, 678 returned sweatmeat selling as their principal occupation and in 1931 the number fell to 553 only for every 1000 workers; the variation being 125 per mille of the number of workers.

The foregoing details may be summarised in the following chief causes of the growth of landless class:—

1. Increase in the total and rural population.
2. Increased pressure of population upon land.
3. Lack of new avenues of employment for the growing population.
4. Fractionalisation of agricultural holdings.
5. Multiplication in the number of absentee landowners and rent receivers.
6. General depression.
7. Weaker economic position and consequent indebtedness of the rural people.
8. Ruin of rural handicrafts and small industries.
9. Transfer of agricultural land to non-agricultural classes.
10. Substitution of collective by individual enterprise.

Caste Composition of Agricultural Labourers

Now, finally coming to the caste composition of the agricultural labourers, it may be observed that right from the highest caste of Brahmins to the lowest caste of Chamars and Passis nearly 54 selected castes are included in this class of unfortunate and neglected destitutes. Sahariya (particularly in Jhansi), Chamar, Khangar, Passi, Kewat, Sansiya, Aheria and Loniya are the most important. These returned respectively 783, 469, 414, 307, 241, 236, 213, and 200 persons per 1000 earners (principal occupation only) from their caste as agricultural labourers in 1931. The castes returning 100 to 200 persons per 1000 earners as agricultural labourers were in order of importance Sonar (191), Karwa (172), Dhunia (166), Bahelia (164), Khatik (160), Barwar (153), Habura (139), Gooriya (126), Kachhi Murao (112), Ahir (111), Gidhiya (107), Kumar (106), Julaha (101), and Kori (100). Brahmins contributed 22 persons per mille of their total earners. Bhuihars' and Kayasthas' share was the least (9). Bhuihars had the greatest number of land holders and cultivators (942) per 1000 earners of their caste. Among Khattris none was an agricultural labourer, while 186 were returned as cultivators. Arakh and Lodh had 878 and 877 respectively as agriculturists (including all classes) for every 1000 earners. [16].

16. Other castes were Kahar (99), Indian Christian (98), Nat (95), Kurmi (95), Thera (92), Bhat (83), Pathau (80), Kanjar (79), Lohar (73), Dhobi and Bhangi each (71) Saikh and Teli (67 each), Mochi (61), Kalwar (56), Saiyed (53), Jat and Barhai each (50), Halwai (46), Nai (41), Gujar (38).

GROW MORE FRUITS

PART II B

By: B. L. CHOUDHRI

(*Continued from September, 1948 issue*)

2. Black Plum-Jamun (Eugenia Jambolanum)

It is not an orchard tree but is commonly grown along the road side all over India. The fruit is black in colour and juicy with stones of prominent size.

Plants are raised by sowing stones during the rains. There is a common belief that plants raised by sowing the whole fruits give better results. The plants may be irrigated during the first year. No irrigation is required once the plant is established. In nature the plants get self sown and grow. It is a common plant all over India upto 2,000 ft. elevation. There are two varieties one of small round fruit and the other of big round or elongated fruits. The taste of the smaller variety is not agreeable. There is a variety that gives fruit twice a year. The plant flowers in the spring and the fruits ripen soon after the break of monsoon.

Fresh stones should be sown for raising plants. Plants may be grown in nursery and later transplanted to their permanent site.

The fruits are very valuable for making vinegar.

3. Bullock's Heart-Ramphal (Anona Reticulata)

Its cultivation is exactly like that of custard apple except that the tree is higher and hence planting should be done at about 20 to 23 ft. apart. Unlike the custard apple the outer skin of the fruit is smooth. But there are clear hexagonal aureole marks on the rind, though larger in size the fruit is not so delicious as the custard apple.

The plants give fruits in summer and till the beginning of the rainy season. This quality makes it worthy of growing, if not in small gardens, at least in bigger ones. The fruit requires protection from birds, bats etc., at the time of their ripening.

Variety:—Horticultural Society's Hybrid is a good variety the flesh of which is less sandy. It also fruits profusely.

Propagation:-The plants are raised by layering or planting the seeds at the beginning of the rainy season.

Manuring:—The plants should be manured with cow-dung manure and a little of bone-meal mixed with it. This may be done every year during the winter season. It can preferably be given soon after the monsoon.

Method of cultivation:—All the general cultural operations are the same as those of custard apple. It, however, prefers a somewhat heavier soil and is less resistant to cold.

4. Caronda (Carissa Carumdus)

This small shrub is indigenous to our country and is grown in all parts except on the hills. The plant grows from 10 to 15 feet in height. It has a tendency to grow as a semi creeper and in the jungles it grows to a considerable height.

The plant is raised from seed. It may be irrigated till two to three years old. Later on no special attention is required. It should be grown as a standard. For obtaining best results it should be treated like a lemon plant. The tree blooms in February and the fruits ripen at the beginning of the rains. On ripening they attain pleasant mauve colour. The fruits when picked or wounded excludes a milky juice which is very sticky and difficult to remove if allowed to fall upon the hands.

The fruits are used for jam, jelly and preserve making. Ferminger suggests

making of tarts and puddings from the unripe fruits. It has, when cooked, much of the flavour of green goose-berry.

The tree can be advantageously used for hedging an orchard.

5. Cashew-Nut-Kaju (Anacardim Occidentale)

Cashew-nut is a forest tree indigenous to various parts of India specially the sea coasts, Malabar, Cochin, Travancore and South Kanara. Till lately like all other forest trees, it was uncared for and was ruthlessly cut. Of late, however, the tree has gained a commercial importance.

The tree is not partial to soil requirements and can be successfully raised on any type of soil. The best results are obtained on, "Sandy soils in the neighbourhood of sea. The tree is intolerant of frost. It withstands drought remarkably."*

Plants are easily raised from seeds sown in situ at 15 to 20 ft. apart. Sowing should be done in the beginning of the rainy season. Plants begin to give fruits in 3 to 4 years.

The value of cashew-nut lies in the use of its kernel as a dry fruit. The careful processing operation is essential as the market price greatly depends on the soundness of the following operations.

1. *Roasting:*—The ripe nuts are fully dried in sun and are then roasted on an iron pan. While roasting the nuts are stirred by long iron rods. When fully roasted a little water is sprinkled over the nuts to avoid burning of shells. The fruits are then taken out. For commercial purposes the roasting pans are provided with leaves for this manipulation. Roasting should be carefully done avoiding the smoke as it is harmful to face and eyes.

2. *Shelling:*—The roasted fruits are split open to take out the kernels. Shelling is done by a wooden mallet.

Care should be taken not to strike too hard or the kernels will be crushed.

3. *Peeling, sweating and grading:*—

Kernels meant for foreign markets are peeled off the thin skin coating. Peeling is generally done after partially drying the kernels. This is artificially done in drying chambers. The peeled kernels are then subjected to sweating in closed chamber where they absorb moisture. The kernels are then graded in four grades.

"1st. grade .....Sound and big sized kernels.
2nd. grade.....Sound and small sized kernels.
3rd. grade.....Halves and broken kernels.
4th. grade .. ..Rejects and spoils."
Sayed.*

Marketing:—Kernels in the Indian markets are sent packed in bags like ordinary grain. They are many a time, not peeled even. For foreign markets packing is best done in tins. The salted tinned cashew nut is now a recognised table delicacy.

6. Custard Apple–Sitaphal (Anona Squamosa)

This plant in many places is found growing in abundance as a jungle. There is a common belief that the plant has a peculiar tendency of not giving satisfactory results under garden conditions. Its fruits get spoiled very soon and are hence mostly sold locally at cheap rates. In those places where it is not found to grow naturally, a few plants may be grown.

Propagation:- Plants are raised from seed. Only fresh seeds should be sown. At some places, however, better results have been obtained by sowing seeds after weathering them for about a week. Plants may be raised in pots and when sufficiently grown, they may be transplanted to their permanent

* 'The Development of the Cashew nut Industry in India' by I. A. Sayed, B. Ag, "The Agriculture and Live Stock in India" Vol. IX, Part I.

places. Best time for transplanting is the beginning of the rainy season. Grafting, budding and air-layering can be done.

Manuring:- The plants give better results in calcareous soil. Application of lime during the winter months is recommended. It may, however, be noted that the tree is not partial to any particular type of soil. It grows almost equally well in all grades of soil from sand to heavy soils. In its natural conditions the plant is found 'to grow in the highest perfection, in the most rockey hot, and barren parts of the country, and spontaneously.' (Jenkins).

Irrigation and prunning:- Only dead and sickly branches should be cut down. The tree should be grown as a standard.

No irrigation is required except during the first year of planting.

Harvesting:- It is an early yielding fruit plant, and begins to fruit after 3 years of planting. The fruits, if allowed to ripen fully on the trees, will surely be eaten by birds, squirrels etc. They may be tied up in muslin bags but the common method of gathering the fruits as they show sign of full maturity and start ripening is quite satisfactory. The fruit on collection have stalk plastered with a thick lime paste and are kept in straw for ripening. Fruits gathered in this condition can also be booked to the outside markets.

FIG–ANJIR (FICUS CARICA)

One of the important factors responsible for the success of fig cultivation is a hot and dry climate. A few of the local acclimatized varieties, of course, tolerate other types of climate too and can be grown with a little care upto an elevation of about 2,500 ft.

Soil:— Medium, rich and calcareous kind of soil is required for its cultivation. It should also not be water logged. An important point to see while selecting site for fig cultivation is that the drainage is very good and also that the soil is not too rich.

Propagation:— Cuttings and layerings are the two most popular methods of raising fig plants. 'Gootee' is best and gives quick results. The current year's branch should be selected for the purpose. Clay and chopped straw are used to effect rooting in the 'Gootee.' The plants throw roots very quickly. If desired the 'Gootee' as soon as it is detached from the mother plant can be directly planted in its permanent place.

Pit Mixture:— The pits prepared for planting figs should be filled with a mixture of two parts soil, one part bone meal, one part cow-dung manure and one part ash and chalk. Generally pits are made 2' to 3' x 3' x 3'. In cases of doubtful drainage it is better to provide underground drains. A simple drain, about 3' deep and 2 ft. to 3 ft. wide may be opened and filled with a bottom layer of rubble covered with turfs with roots up, and the trench filled with the garden soil upto the top, may be provided.

Varieties:- Black Ischia, Kabul, Bangalore, Lucknow and Brown Turkey are recommended.

Planting and Notching:—Keep the plant open by prunning all extra and over lapping branches. The young plants are prunned upto a height of 3 ft. and the height of the plant is kept within bounds of six feet. Figs are borne on well ripened wood of the previous year. This point must be remembered while prunning. The plant can stand heavy prunning but over prunning results in poor growth and yield. The following method of prunning suggested by Sherrard Smith, M. C., is the most practical one:—

"It will be assumed that the young tree just planted is single stemmed. In December when the plant is deciduous this should be cut back to a foot or 18 inches from the ground.

"The following December three of the strongest branches should be selected and cut

back to 10 to 12 inches from the main stem and shoots on what remains on these branches cut back to one or two eyes. All the other branches should be removed entirely.

"The next December the same process should be renewed but this time six or seven branches should remain. This formation i. e. one centre stem with 6 to 7 branches will constitute the structure of the future tree.

"Each year the season's growth on these branches should be cut back to the 3rd. or 4th. eye". ('The Fig in Rural Areas', Department of Agriculture, U. P., Bulletin No 20. of 1940.)

The fig has a tendency to throw shoots from any point where a notch is made. This is taken advantage of to have the best spacing of branches.

Root prunning is invariably resorted to, for plants growing vigorously without bearing fruits. Wintering of plants also is a corrective measure to non-bearing plants.

Manuring:—Fig does not need heavy dose of nitrogenous manures. Initial doses of F. Y. M. will be enough. No nitrogenous fertilizers should be used. Application of bone meal in the beginning of the rains, sulphate of potash in September, October and Chalk later on in December may be given. The amount should be decided according to the size and age of the plant.

Irrigation:- Irrigate the plant profusely during the summer months to prevent falling of fruits. Copious irrigation twice a week must be done from the time the fruits are properly grown till the end of the harvest.

Fruiting:- At a new place of introduction fig generally do not fruit. This is due to the absence of the minute insects—Blastophaga and Sycophaga, which help the fertilisation of the fruits. In such cases get a few half ripe or fully ripe but not dried fruits and tie them to the plants to introduce the insect in the orchard. Growing of a few plants of the wild variety together with the cultivated ones also helps in achieving the fertilisation. Tying of burring capri figs near the desired plants may also be done. This is very essential for all the dioecious types which incidentally are the best edible varieties too.

Harvesting:- The fruits begin to ripen from April and ripe fruits are had till the beginning of the rains. During the monsoon the fruits do not ripen, turn yellow and fall down.

Curing of figs is the most important item of marketing. It is done by fumigating the figs for 10 minutes at 30 C in the sulphur fumes. The fruits are then pressed. Ripe fruits can also be utilised for wine making.

A Note on Rural Reconstruction through Cooperative Labour in Coorg

It was a red letter day on 5-9-48 for the eight villages of Fraserpet Hobli in North Coorg when Dewan Bahadur C. T. Mudaliar, Chief Commissioner of Coorg, accompanied by Mrs. Mudaliar, inspected all the villages after hearing their grievances at a meeting held at the Hebbale Higher Elementary School. The Registrar of Co-operative Societies, the Civil Surgeon, the Executive Engineer and representatives of almost all the departments, Mr. K. P. Appiah, M. L. C., and Mr. S. B. Kaliah Gouda, Member of the District Board and about 1,500 villagers received the Chief Commissioner at Hebbale at 9-30 A. M. All present witnessed a cattle show at Hebbale.

Every village had been cleaned for the last 14 days and all of them bore a festive appearance with pendals and festoons. Poojas were held in all the village temples to wish the new Chief Commissioner long life and prosperity.

An interesting account of the co-operative work done during the last 14 days in all the 8 villages was placed before the large assembly by Mr. S. Kalegouda, the District Board Member for this constituency. The villagers have cut 20 miles of road with deep drains and cleared 20 acres of lantana and rank vegetation by contributing in the aggregate voluntary co-operative labour of 10,105 persons. Reckoning their wages at Re. 1/- per person per day it is estimated that Rs. 10,000/- worth of work was turned out for the benefit of the villagers. It is noteworthy that the villagers came forward to do this voluntary work without distinction of caste or creed. Even women also participated in the work. The villages can now boast of good cart tracks and clean roads throughout the villages. Hebbale, Torenur and Sirangala are the biggest villages in Coorg with a population of about 3000,1600 and 1900 respectively. The eight villages now worked under this scheme contains a cattle strength of 50000. This experiment of cutting roads, cleaning drains and pools, clearance of rank vegetation in the approaches to the villages and round about their houses and cattle sheds has brought home to them practical lessons of clean living. One special feature of the work was that Harijan colonies in all the 8 villages were thoroughly cleaned and in some places those quarters were better than that of caste Hindus. All the 8 villages have separate co-operative credit societies and this helped them to take to co-operative joint labour.

Mr. S. N. Ramashetty, President of the local Co-operative Union, while welcoming the guests placed a memorandum containing the grievances of the ryots of these parts for the consideration of the Chief Commissioner the important among them were the Harangi irrigation project, protected water supply to the 3 big villages and the introduction of compulsory and free primary education. The Chief Commissioner promised immediate and sympathetic consideration. The Chief Commissioner in his speech thanked the Registrar and the Union President and remarked at the outset of the good work done by the Registrar of Co-operative Societies and the Assistant Health Officer in undertaking this work and congratulated the ryots for co operating with the officials in doing the work within such a short time. He said that he was quite convinced that Rs. 10,000/- worth of work was turned out during the period and exhorted the villagers to keep the works going by devoting sufficient attention from time to time. He announced that he had appointed a village development officer recently with a view to cater to the needs of Harijans in particular and the poor people and that he would tour extensively in the villages to know the grievances of the ryots firsthand. He appealed to every one to emulate the illustrious example set by Mahatma Gandhi, the father of the Indian Nation and Jawaharlal Nehru and Vallabhbhai Patel, the two great living statesmen of India. He said that nothing more was pleasing to him than to mix with the villagers and do his best for their amelioration. He gave the instances of the happy time he spent for 3 days with the flood stricken villages of Coorg recently.

In conclusion he gave the villagers the following advice:—

"(1) Think of God every day and every moment. It costs nothing to do this but the

results achieved will be second to none.

(2) Do not waste money on litigation. It is a popular belief that Godess Laxmi deserts a litigant who dabbles in court always. Settle ordinary disputes amicably by local panchayats.

(3) Keep your houses and surroundings clean and lead pure lives.

(4) Develop a sense of feeling for helping the poor and help to eradicate poverty. Let not the village money-lender think of usurious rates of interest.

(4) Give up the habit of drink. I have not touched a drop of drink in my life. The best examples can be found in persons like Mr. Bernard Shaw and Sir Archibald Nye. Drink ruins a family. I will do my best to introduce prohibition early next year unless my hands are tied.

(6) Educate your children at any cost and make them useful citizens.

(7) Sink all differences and above all communalism. Let us all feel that we are Indians first and last.

(8) Let us all give unstinted support to the Government of India.

(9) The finances of Government are as much yours as that of the Government proper. The revenue of Coorg is rather in-elastic at the present moment and the requests are far too many. Be reasonable in your requests. I am exploring the possible sources of fresh revenue. I promise to do my best to the country. I make no differences between the Government and the people."

—Registrar,
Cooperative Societies,
Coorg, Mercara.

USES OF COCO-PALM IN THE XIVth CENTURY

By : **V. S. BENDREY**

In these days of "Prohibition campaign" Government is often asked to show the methods and ways for diverting beneficially the yields of coco-palm trees for other than "drink" purposes. The trees were, no doubt, long in existence before their produce was utilised for alcoholic drinks. Those possessing coco-palm groves and especially those who are engaged on a search for utilising the yields of these trees in a better and more profitable manner may find it interesting to read the observation of Ibn Battuta, who travelled through Asia and Africa during the second quarter of the fourteenth century (1325 to 1354 A.D.):

"The Coco-palm is an extraordinary tree; it bears twelve bunches a year, one in each month. Some are small, some large, some dry and some green, never changing. They make milk, oil, and honey from it...

"The Coco-palm is one of the strangest of trees, and looks exactly like a date-palm. The nut resembles a man's head, for it has marks like eyes and a mouth, and the contents, when it is green, are like the brain. It has fibre like hair, out of which they make ropes, which they use instead of nails, to bind their ships together and also as cables. Amongst its properties are that it strengthens the body, fattens, and adds redness to the face. If it is cut open when it is green, it gives a liquid deliciously sweet and fresh. After drinking this one takes a piece of the rind as a spoon and scoops out the pulp inside the nut. This tastes like an egg that has been boiled but not quite cooked, and is nourishing. I lived on it for a year and a half when I was in the Maldiv Islands. One of its peculiarities

is that oil, milk and honey are extracted from it. The honey is made in this fashion. They cut a stalk on which the fruit grows, leaving two fingers length, and on this they tie a small bowl, into which the sap drips. If this has been done in the morning, a servant climbs up again in the evening with two bowls, one filled with water. He pours into the other the sap that has collected, then washes the stalk, cuts off a small piece, and ties on another bowl. The same thing is repeated next morning until a good deal of the sap has been collected, when it is cooked until it thickens. It then makes an excellent honey, and the merchants of India, Yemen and China buy it and take it to their own countries, where they manufacture sweetmeats from it. The milk is made by steeping the contents of the nut in water, which takes on the colour and taste of milk and is used along with food. To make the oil, the ripe nuts are peeled and the contents dried in the sun, then cooked in cauldrons and the oil extracted. They use it for lighting and dip bread in it, and the women put it on their hair."

(pp. 242 and 114-5, "Ibn Battuta-Travels in Asia and Africa, 1325-54", translated and selected by H. A. R. Gibb, London, 1929.).

GLEANING

Hon'ble the Food Minister on Cattle Problem

While opening the Seventh All-India Cattle show in Delhi, Hon'ble Jairamdas Daulatram, Minister for Food and Agriculture, said:—

"You know that India is essentially an agricultural country and cattle are the backbone of agriculture. About 80 per cent of India's rural population is agriculturist, for whom cattle have an importance of their own. They occupy a unique position in the rural economy of this country and have therefore been an object of special care and affection in India from the most ancient times. Our problems are two-fold. We need more milk and milk products to provide an adequate diet to our people and we need better, healthier and stronger bullocks, for in all agricultural operations oxen are indispensable to the Indian farmer.

PRESENT POSITION

"We possess one-third of the total cattle population of the world. According to the 1941 census report, the total bovine population (cattle and buffaloes) of undivided India was 208.2 millions. It is estimated that as a result of the partitioning of the country, about 30 million cattle have gone to Pakistan. In spite of our huge cattle population, the country is in short supply both with regard to bullocks as well as milk. One of the main reasons is that our cattle suffer essentially from food shortage. The slow process of starvation to which our livestock is exposed, is evident from its unthrifty condition, poor productive capacity, stunted growth, late maturity and long intercalving period. We thus lose millions of tons of milk and an enormous amount of horse power. Do we realize what this means in terms of national health and production and therefore of national wealth? As matters stand at present, not more than 60 per cent of the fodder required is available and only one-fourth of the total concentrates needed can be obtained. The position with regard to the supply of milk is still worse. About 22 million tons of milk is produced annually from cows and buffaloes in India. This must be increased to about 65 million

tons to meet the minimum nutritional requirements of our people when calculated at the rate of 1 lb. of milk per day per head of the population (8 oz. in milk and 8 oz. in the form of milk products, *ghee*, butter, etc). To allow for the feeding of calves, another 10 million tons is needed. The present *per capita* consumption of milk in this country is only 5 to 6 oz. In some of the other countries, it is far greater. It is as much as 40 oz. in Denmark, 45 oz. in Australia, 35 in the United States and 39 in Great Britain. It would thus be seen that although we possess the largest cattle population in the world, we supply the least quantity of milk per head for human consumption. Cattle rearing in this country is carried out under a variety of adverse climatic and other environmental conditions. The average cattle breeder is poor. He lives on small fragmented holdings, the majority of which are less than five acres. The average size of his herd consists of only two to three animals as against 27 to 28 in countries like England and the United States. The units are thus uneconomical and the individual owner cannot by himself introduce any appreciable improvements.

"Considering the immensity of the task and the numerous complications, the solution is not easy to find, but it is evident that we must endeavour to improve our cattle by better feeding, breeding and management.

BETTER FEEDING

"The problem of providing more fodder and concentrates for our cattle is indeed difficult, for pressure on land is already heavy and there is serious competition between man and animal. In any plan to bridge the gulf between supply and demand as regards deficiency in cattle feed, the requirements of human beings must, of course, receive primary consideration; but on a careful review of the entire position in regard to cultivation and yield as a result of introduction of the latest scientific methods, it appears possible that by re-adjustment of our cropping programme some extra feed can be made available for cattle. But their total requirements can only be met if production from land can be increased by about 50 per cent. We must, therefore, tap every other source to supplement food for cattle. These sources can be:

(1) Hay and silage making out of the surplus grass which is available during monsoons should be practised all over the country. There are 136 million acres of grazing land in India. No precise data are available as to how much grass this land produces, but the limited information we have, goes to show that the production of grass is about 2 tons green per acre. At least one-third of it could easily be preserved as hay or silage. All this now goes waste.

(2) Many forest areas under the Forest Department grow large quantities of grass which should be made use of by cutting and preserving as hay or silage.

(3) Crops which are known not only to increase the quality of nutritious fodder but also improve fertility of the soil such as berseem should be extensively grown, wherever possible.

(4) Large quantities of oilcakes are at present used entirely for manurial purpose. It is a matter for consideration if this cake would not equally serve the object in view if some of it is passed through cattle.

(5) The Nutritional Laboratories of the Indian Veterinary Research Institute have extensively explored the possibility of new sources of foodstuffs and it has been shown that mango seed kernel, munj, kans, *Jammun* seed, acacia pods, groundnut husk, *bawar* seed are rich in feeding value and can be extensively used as feed for cattle.

(6) The deficiencies in rice straw, if corrected by the addition of bone ash, will increase the utilization of this foodstuff.

(7) A great deal can be accomplished, if the mixed farming practices are more widely adopted.

(8) Thirty per cent of waste can be saved if all the fodder is chaffed before being fed to cattle.

(9) More use should be made of fodder bearing trees, as their leaves and pods provide excellent fodder.

(10) The fish meal industry in the country should be developed so that more of highly concentrated protein food is made available in the form of fish meal for cattle.

IMPROVEMENT BY BREEDING

"Planned scientific breeding of animals is also necessary for improvement of our cattle. A number of Government farms are at present producing pedigree bulls of various breeds and these animals are distributed in the villages for the improvement of local stock. There are about 45 such farms in India which annually issue about 1868 bulls. Considering the requirements of the whole country, these 1868 bulls distributed annually do not meet even 1 per cent of our annual requirements. To produce the bulls required annually for the whole country at the Government farm is not a practical proposition. Our efforts to improve the village cattle should, therefore, be concentrated in the following directions:—

(a) All bulls issued from farms should be located in a specially selected breeding tract and concentrated in a few villages, so that casualities and replacements are assured. From this area all other male stock should be removed. In due course, these 'key villages' would be in a position to supply the better bred animals for distribution in other areas.

(b) Efforts should be made to evolve dual purpose breeds, that is, breeds which would produce good working bullocks and also yield a fair amount of milk. Work in this connection is in progress with some of the indigenous breeds such as the Harianas and the Hallikar. The Government of India are now setting up a farm at Jubbulpore, where it is proposed to study this problem in great detail.

(c) The method of artificial insemination is being widely practised in several other countries, where it has definitely proved its value. Work done at the Indian Veterinary Research Institute has shown that a great deal can be achieved even under Indian conditions. Four experimental field centres set up recently have yielded very promising results. By the adoption of this method one bull can do the work of 10 and extensive use can be made of really superior sires. It is, therefore, essential that necessary steps should be taken by all provinces and States to explore the possibilities of the use of this method to the fullest extent."

NEWS

ALL-INDIA BEE-KEEPERS' CONFERENCE

At a meeting of the members of the Nandgad Bee-keepers' Co-operative Society and other prominent persons of Khanapur Taluka in Belgaum District held at Nandgad on the 31st August, 1948, it has been decided to hold the 11th All India Bee-keepers' Conference & Bee-Exhibition at Sri Gandhi Gram, Nandgad on Friday, Saturday & Sunday 29th, 30th April & 1st May 1949. A reception Committee has been formed under the Chairmanship of Sri. B. S. Argavi. Merchant, Director, Sri Veeresh Rice Mill, Chairman, N. R. E. Society & N. B. K. C. Society, Nandgad. Arrangements to have the functions on a grand scale are in progress. Notable persons from all over the country are expected to attend. Detailed programme will be published later.

A brief survey of the Bee-keeping work in Bombay Province may not be out of place here. There are about 3 to 4,000 Bee colonies established producing about 20 to 25,000 pounds of honey every year, of which about three fourth comes from N. Kanara, particularly Honavar and other coastal talukas and the other one fourth comes from and round about Nandgad, Mahabaleshwar and a few scattered places. In N. Kanara the work is being carried on since 8,9 years started by the All India Village Industries Association and now run by the Bombay Co-operative Department. A number of co-operative societies have been started and are run satisfactorily. In Nandgad and Mahabaleshwar, the Village Industries Committee, (Bombay Province) set up by the Government is running the work, since nearly two years. It has extended its activities in other districts as well Viz. Dharwar, Ratnagiri, and Surat besides Belgaum and Satara. It has also prepared a Five year plan for the whole Province for the consideration of the Government. There is immense scope for developing the industry in the Province and if fully developed several crores rupees worth of honey could be produced every year as the best part of the most productive Western Ghats and a long Coastal strip lie in the Province where bees and flowers abound. The area of the Bee belt has been calculated to reach something like 51, 800 sq. miles offering room for more than 30 to 40 lacs of Bee colonies which would in turn yield 2 to 3 crores pounds of honey every year if properly housed and cared for. Calculating at Rs. 1-8-0 per pound, the total cost of honey will come to about 3 to 4½ crores rupees. Training in Bee-keeping and any information on the subject can be had from the V. I. C., Bee-keeping Centres at Mahabaleshwar, Nandgad, Dhamapur, Avatha-Dharampur etc. and also at Honavar.

H. VISWANATHAN,
Hon. Secretary, A. I. B. K. A,
(Bombay General)

WANTED AGENTS

(1) To enlist subscribers,
(2) To secure advertisements, and
(3) To push the sale of "the Rural India",—the only magazine of its kind on Rural Reconstruction and Planning, approved and recognised by practically all the Provincial and States Governments for their various nation-building departments.

Apply for terms, to

The Manager,
The Rural India,
Ishwardas Mansions,
Nana Chowk, Bombay, 7.

THE RURAL INDIA

Vol. XI No. 10] NOVEMBER, 1948 [Whole No. 117

"Salvation of India lies in Cottages" —*Mahatma Gandhi.*

FOOD PRODUCTION DRIVE

India is suffering from acute shortage of food supply. The Food Grains Policy Committee appointed by the Central Government in September 1947 has recommended a target of 10 million tons of additional food to be produced within the country to meet the overall food requirement of our growing population. This target has to be reached within 10 years by launching a country-wide 'Drive' for increased food production and the Committee has suggested definite directions along which efforts have to be directed.

The task is formidable if also baffling the same time. The failure of 'Grow More Food Campaign' during the last five years have made people sceptic about Government measures to bring about increase in food or national production. The Economy Drive which aims at cutting down the Government expenditure in various departments between 20 to 30% and consequent reduction in the number of working personnel further confirms this growing scepticism. The old bureaucratic machinery entrusted with the implementation of plans of production has been found to be wholly unsuited to the changed needs of creative and constructive nation-building and does not inspire confidence among the people. All this has created a vicious circle which remains unbroken and the tallest of our administrators do not know how to make a way out of it.

In short, the problem of production, on which rests the economic contentment of the people is our greatest hurdle in the words of Sardar Patel, which has, so far,defied all calculations and efforts. In his message to the nation during his recent birthday celebrations in Bombay, the Sardar referred to this all important problem of economic reconstruction and production and said:–

"We have, however, yet to surmount our greatest hurdle. This is the problem of our economic reconstruction and inflation. Despite our many attempts to solve these problems, we are not yet on top of the situation. To *fight these two evils, it is necessary for us to produce more at lesser cost.* We have to perfect our machinery of distribution, so that there is no loophole at any stage of the economic process, which brings consumer goods within the reach of every citizen. For all these, we need the unstinted support and fullest cooperation of civil servants, the employers and labourers. If every one of us is guided by an unreserved loyalty to the country and sets aside, in the wider interests of the country our own selfish ends, I have no doubt that we can evolve measures which would satisfactorily overcome our economic difficulties."

This is too big a 'If' and, of course, very difficult one too to be removed, notwithstanding super-optimism on the part of Sardar Patel. If this metamorphosis of placing the

wider interests of the country above self could be brought about among our people there could be no hurdle which could not be surmounted. An essentially practical man of the world that he is, Sardar Patel knows his people much better than anybody else and he also knows it too well whether the hope of bringing about this sort of psychological transformation is well placed. With due difference to his super-optimism with which his birthday message is replete, we doubt, if the Government has taken the first satisfactory step towards solving the baffling economic and production problem of the country.

Absence of clear-cut and well-defined plan of production is the major hurdle to which we have drawn the attention of the Government, times without number, in these columns. Strictly confining ourselves to the problem of food production in the present consideration, we are constrained to say that the public are hardly aware of the Government's decision on the recommendations of the Food Grains Policy Committee and the steps taken to implement them. It is being reported in the daily Press that the Indian delegation attending the annual session of the U.N. Food and Agricultural organisation in Washington (U.S.) this year, proposes to plead for four million tons of food being allotted to India during the present year, whereas the quantity already allotted is only three million tons.

Increasing dependence on foreign imports is a clear proof of our decreasing production at home. The public should be told as often as possible how the Government has planned its food production campaign, what means and machinery have been employed to implement the plan in the various provinces and the newly formed state units, how the working of the plan has been integrated from its central source of planning and direction pown to its field of operation, what machinery has been instituted to check the progress of the plan at periodic intervals; and what tangible results at increased production of food grains have been achieved. All this is very essential to attract public support and cooperation.

If the public are kept ignorant of the working of the Government plans and policies, they need not be blamed for their apathy and inaction. The blame in that case lies with the other quarter. We would like to publish Government communique explaining to 'The Public' in detail how their plan of food production is being implemented in a truly and scientific way in order to attain the target of 10 million tons aimed at. In a democratic administration, the Government should keep every citizen well-posted with their administrative activities to rightly claim public sympathy and cooperation.

Fixing priority consideration to the main problems before the country, Sardar Patel has, in the course of his birthday message, stated them in the following order:-

"Our broad requirements are settled and clear. We must have modern army, economic contentment and stability, a disciplined and responsible citizenship and a firm administrative fabric. These are our essential requisites as well as expression of our unity and strength."

Obviously, modern army takes precedence over all other problems on which the Government already spends about 50% of its total revenues. To make it still more modern, this per centage is very likely to be increased in the near future. Army and Police, it is believed, are not likely to be affected by the present economy drive, while agriculture on which hardly 1% of the Government revenue is being spent is already axed. The Economy Committee appointed by the Government have already recommended

restrictions on the activities of the Agriculture Ministry, retrenched 289 persons and effected a saving of Rs. 5,20,000 a year in its budget. This attitude of the Government stands in clear contrast to their often repeated claim of giving priority consideration to the problem of food production and economic contentment. We, somehow, fail to understand, how with severely curtailed expenditure and reduction in the personnel of the agriculture department, the Government hopes to bring about increased food production in the country. An item of expenditure allotted to the production of the nation's food supply which was already rediculously low is being further cut down to effect Economy and still the Government hopes to increase several million tons of our food requirements is what we, at least, fail to comprehend. The Government would be well-advised to let the public know, how under the changed economic conditions of the country and the poor finances of the Government, they propose to pursue their plans for increased food production.

All development and production plans need huge financial investment and efficient and trained personnel to execute them. If the Government of India seriously mean to solve the problem of food-production, they should be prepared to find and invest necessary money over it. In order to produce definite and tangible results within a specified time, the plan should be centrally sponsored and directed, of course, making use of the available means and machinery in the Provinces and other small units. The whole chain of working of the plan from the centre of planning down to the farthest field of operation should be properly co-ordinated and integrated. In the peculiar circumstances of our country the execution of the plan should be entrusted to a leader or administrator of eminence who may be capable of inspiring confidence among the people. He should be a dynamic figure capable of creating enthusiasm for his programme both among officials as well as public and he should also command the gift of harnessing popular enthusiasm along channels of "Mass-Drive". If the Government are in right earnest to achieve food self-sufficiency they should create necessary conditions for a successful 'Mass Production Drive'.

And, finally the test of the Government's earnest approach to the problem of food production is that they must be prepared to shift the emphasis from the collection of revenues to the production of food from every piece ofland cultivated in this country. For centuries together, the Government have been maintaining records of the quality of land, their measurements and a fixed revenue assessment levied thereon. They have so far looked upon the land as a source of giving them so much money or revenues from year to year. But they had never cared to assess the production potential and insisted on the producers to maintain a fair standard production of the lands cultivated by them. Is it any wonder that in the absence of Government's complete neglect of the production potential, the producing capacity of the lands has gradually deteriorated.

If the productive capacity of the lands has to be raised to the full, the Government should change its age-old attitude towards the land and look upon it as a source of producing so much food or other commodities to satisfy the needs of the community. With this change of emphasis on the part of the Government miraculous results are bound to follow. Taking things as they are at the present, it should not be impossible for the Government to order the Revenue and Agriculture staff to prepare records fixing average productive capacity of each cultivable piece of land and insist on the cultivators to produce the requisite quantities. If the concerning departmental staff of the Government know the productive capacity of lands in their areas and if every cultivator also knows how much he has got to produce from each one of his lands, the food production in the country is bound to increase by leaps and bounds, no matter whether other known facilities are there or not.

An acute food crisis like the present calls for drastic remedy and change of emphasis on the part of the Government. That being done other means and measures will follow in a natural corollary. Essential as the falities of plentiful water, manure, and good seed are, more important than all these put togeher is the changed outlook of man and theapplication of human mind to the attainment of a specific object. If food production has to be increased and if a country-wide drive has to be organised, the Government and all those who constitute the Governmnt will have to be production-minded and they should look upon the land as a fountain of so much food production.

NOTES

YEARS OF NATIONAL CRISIS

INSPITE of ourselves, it is being slowly recognised in this country that the years immediately following the attainment of freedom are not to be the years of plenty and prosperity, which we have all learnt to associate with, but the years of great turmoil, confusion and national crisis. Those of us, who had dremt to see everything green and heaven-like coming to their share immediately India gets freedom, would do well to get themselves disillusioned of their wrong notions and prepare themselves to face a national crisis, which in itself is a God-sent challenge to test our capacity for freedom. The crisis that we are called upon to face is a part of the world in transition and it is futile to think of stable and normal conditions before 'One World Order' is finally established. The crisis period, therefore, at the modest calculation may be between 5 to 10 years or even longer and it is a part of wisdom and statesmanship on the part of our leaders to let the common citizen understand what it implies and prepare him to face it with fortitude and discipline. It is futile to feed people's minds on vague hopes and promises of better future which hold no prospects of being redeemed and which only end in more frustration and disappointment.

It is relieving to find in this context a realistic warning uttered by Shri K. M. Munshi, Agent-General of the Government of India in Hyderabad in reply to a reception given to him by the Bombay Provincial Congress Committee, in which he is reported to have said:

"The coming five years was a period of national crisis and all criticism must be hushed in the interest of national solidarity and that every section of the people in India should strengthen the National Government in every conceivable way."

The post-freedom era has been a period of hopes unfulfilled, frustration and disillusionment. The people are confused and bewildered to see something very different and unexpected in this period than what they had cherished to witness all their lives. Rather than things taking an upward course every aspect of national life has a perceptible downgrade trend. And the people including the best of us in our distress and exasperation are developing a tendency to blame the leaders and the administration for everything going wrong round about us. The adiministration complains of lack of co-operation and responsiveness on the part of the people and the people likewise throw the blame on the Government for not creating opportunities for co-operation and/or not even availing it when it is offered. This obviously is a wrong and unhelpful attitude on both sides which must of necessity stop in the face of grave national crisis and all should prepare to face coming difficult times with unity and determination.

In a period of severe trial through which we are passing, every Indian citizen is called upon to feel a sense of national obligation and he should be prepared to make his or her contribution towards national survival and recovery. The law of the 'Survival of the fittest' demands from us that we should give proof of our fitness at this critical juncture of our history. National loyalty demands from each one of us that we should give our best and try to build up the morale of the nation. It is a positive disservice to the nation and therefore a moral crime if people run after power and privileges and forget to do their duties in this extra-ordinary difficult period of

time. Highest National loyalty and sense of responsibility is the demand of the hour. Freedom without responsibility is a fool's paradise which does not exist in reality. In his own inimitable way, Pandit Jawaharlal Nehru has placed before us the supreme need of responsibility at this juncture while addressing the Constituent Assembly and stated:—

"Freedom brings responsibility. There is no such thing as freedom without responsibility. Irresponsibility itself means lack of freedom. Therefore, we have to be conscious of this tremendous responsibility which freedom has brought and discipline ourselves".

They say, 'Crisis reveals a man'. Let us make use of this crisis and prove our capacity for glorious survival is, what 'Free India' expects from each one of its citizen.

GOVERNMENT MEASURES TO FIGHT INFLATION

At long last, the Government of India have announced their policy to fight the monster of inflation. The broad considerations on which the present policy is based, as stated by them in their announcement, are:—

"The first is to make all possible measures to keep the Government expenditure as low as possible consistent with efficiency, and to increase revenue by all available means.

"The second is to make a concerted effort immediately to ensure that there is no further rise in prices and the costs of living.

"The third is to order future policy as to secure, in the shortest possible time, progressive reduction in prices to reasonable levels and the supply of an increasing volume of goods and services.

"Lastly, wherever possible every endeavour should be made to curtail the purchasing power in the hands of the community and to prevent any addition thereto.

"A Committee of the Cabinet has been set up to carry out an urgent review of all development plans both Central and Provincial with a view to determining the relative priority of accepted schemes as that expenditure on such of them as are not productive or could be postponed or slowed down, without detriment to the national welfare, might be deferred or curtailed.

"Provincial Governments have also been warned that in the present circumstances they can expect no financial assistance from the Centre in the implementation of their plans for the abolition of Zamindari or for Prohibition, and that in trying to finance the cost of these schemes they should see that the Centre's borrowing programme is not affected.

"Provincial Governments are also being advised to strengthen their finances by the levy of an agricultural Income-Tax where it is not now levied."

In a grave economic crisis facing the country the Government have no other go but to resort to measures of economy in administration and to improve their revenues by increased taxation. These emergency measures are intended to tide over a period of crisis. Of course, they do not hold satisfactory promise to cure the malady of shortage of supply of food, cloth and other basic needs by man, which are only possible to be met through increased production. In the absence of increased production of agricultural and industrial commodities and plentiful supply of the necessaries of life, how on earth, can the sky-rocketing prices be brought down and inflationary tendencies be curbed. In the sphere of stimulating produc-

tion drive in the country, we regret to have to admit, the Government policy is not much assuring. And, it has not as much as made a mention of food and Cottage industries production which are the basic factors of industrial development in the country.

Looked at from the constructive point of view, the present policy lacks elements of increasing national and particularly agricultural production which is the main stay of the people's life. Shri G.D. Birla, an eminent industrialist of the country, in the course of his statement on the Government policy expressly pointed out the drawback and said:-

"There is one point which has not been touched. That is the increased production of food. It must be realized that it will be almost impossible to bring down the general level of prices until we can increase our food production by at least five million tons."

It is very much to be regretted the Government policy is completely silent over this vitally important issue of the production of food. In the course of a note submitted to the Government, Shri Jai Prakash Narain emphasises the necessity of increasing agricultural production and says:-

"Agriculture should receive far more attention of the Centre than it is getting today; village panchayats should be formed and through them a production drive should be launched. The production potential of villages should be assessed by them and their requirements in terms of manure, bullocks, tractors, other crushers, implements, wells, small irrigation schemes, charkhas, looms, oil crushers, dairy requirements, etc., should be determined, and met under Government initiative through cooperatives with a view to reducing the cost of production."

With economy drive, which the Government has already launched and which is intended to cut down the present budgetary expenditure by 20 to 30%, the chances of organising vigorous 'Food Production Drive' in the country are very remote indeed. On the contrary, it may safely be assumed that nation-building departments and particularly the departments of development, education, health, agriculture, cooperation and Cottage industries are likely to be hit the hardest under the economy drive. With poor finances, reduced activity and consequent shortage of production, we fail to understand how the Government policy will succeed in curbing inflation.

Production and intensive effort at production is the only permanent solution of the difficult problem of inflation. It requires huge financial expenditure, employment of large trained machinery and planned and organised drive on the part of the Government. With all the three essential elements lacking, it is difficult to be optimistic about the outcome of the present policy enunciated by the Government.

GANDHI JAYANTHI AT GANDHI GRAM

By: RALPH RICHARD KEITHAHN

WE have yet to learn how to truly pay tribute to the birth of a great man. If a man has been truly great, that is, of immortal stuff then his birthday cannot be a mere holiday. It must be one of those concentrated workdays when we live for the Ages. May Gandhi Jayanthi gradually rise to such heights!

Some one hundred staff and student members of Gandhi Gram started planning some days ahead this year for a fairly intensive programme in the villages during Gandhi Jayanthi. We divided into seven groups: four to go to four village centres where we plan to do intensive work during the coming year; and three to develop special projects for all the centres: a village exhibition, an evening of drama, and a tree-planting project for the villages and for Gandhi Gram itself. For two weeks previous to Gandhi Jayanthi these groups were at work planning for the Gandhi Jayanthi programme. The village groups

planned their village programme, worked out their needs and prepared for intensive work. They visited the villages concerned and made plans for their coming. Fortunately we had already arranged a Panchayat for that area so that we had the representatives of the people to work with.

Suspicious Villagers

Except in two villages where Grama Sevikas were working our reception was not very cordial. We were suspected especially by the caste people. They sensed that there were Harijans in our midst. They had heard of our stand on Untouchability. They felt we were going to force them into a similar position. That suspicion remained unto the end with many. In one village however Harijans alone were represented and there we had a very good response and very good cooperation. But in every village within a few hours several felt the sincerity of our workers and responded. And when the nine days were over and the groups had to return for the Gandhi Gram Anniversary Programme which would climax the whole programme there was universal regret that their newly-formed friends had to leave. I was especially impressed by one village where we wondered if hospitality would be available. Cowsheds were finally made available. Our Trainees soon had them in order and were soon in happy fellowship with the villagers. I was surprised how soon the hearts of many were won. The process was slower in other villages but that depending upon personalties.

The Village Programme

Before groups went to the villages they had their daily discipline and programme worked out. Thus right from the beginning they started with their morning prayers, sanitation work, morning meal, spinning, etc. Very soon the villagers joined in with morning and evening prayers—at least those who were present and not in the fields. In most places children and a little later the women joined in with the sanitation work. Very quickly children, then some youth and later even some of the older people wanted to learn spinning. And did learn so that some twenty of them shared in the spinning contest at Gandhi Gram on our Anniversary Day. In each village spinning is continuing and we are making plans to put this beginning on a self-sufficient and stable basis. That perhaps is the greatest significance of those nine days in the village; it started for Gandhi Gram a substantial bit of work that we must now carry on throughout the year.

Our Exhibition was largely a chart exhibition and that did not appeal greatly to people who were 95% illiterate. Another year we must do more with models that tell their own story. The Drama Group had a better response. There were several scenes of the significance of a "casteless, classless society" in the village with special emphasis on a casteless village. Then the group had also worked out a drama from Les Miserables. Perhaps here again we must come closer to the village life and experience. I was most interested in the Tree Planting Squad and project. Over 30 trees were planted: mango and cocoanut both on common and private land. A tree planted and well-cared for is a gift to immortality. The Groups naturally had much to do with the children. This occupied the time of several each morning. And the villages are all more deeply interested in schools. Simple medical work was carried on under the supervision of qualified medical help. Many sore eyes and much itch was eliminated during those few days. Naturally adult education went on 18 hours each day. At the prayer meetings there were talks about the great leaders of India and what they stood for. There was an explanation of what Gandhi Gram stood for. Villagers learnt more about the Gita and other scriptures. One day an Agricultural Fieldman came and told the men about more scientific manure pits. And as the ladies visited the homes naturally much informal education went on as questions were poured forth from eager minds. Villagers learnt something of the significance of the flag and nationhood—something of the ettiquette of the flag. And on Oct. 2nd all of this was brought together into one happy programme. Spinning went on throughout the day; the flag was raised at the time of the morning prayer; memorial trees were planted; there was a public meeting; and at one village the foundations for a Basic Education school were laid.

The Followup

It is impossible to list all that was done during those full days. One group writes, "The villages gained practically nothing". That is a sound judgment. Again, "Our short stay will take us nowhere except that it

would have given us some experience". That is the heart of the value of such days at least for a Training Institution. When students go to the villages they should not be permitted to fool themselves that they accomplish much. They often do under favourable circumstances. But again as a group writes, "The work is too vast for the Grama Sevika to handle it alone." Such work must be a part of a much larger and longer programme. There must be preparations made previously; there must be a followup after the special contact is made. And so now the followup is being planned. Members of groups have visited their village friends during the past month. Some villagers have visited Gandhi Gram. The staff itself is preparing a substantial programme for the coming months which will be started by the training of a small group of young village enthusiasts from the villages themselves that they may carry the brunt of the work started although naturally we shall be at their sides constantly giving every inspiration and help possible. Spinning will be placed on a regular basis. Adult education will be carried on regularly. Wells will be dug and repaired that a safe drinking water supply is assured. Within a reasonable time we expect a Basic Education School in all these villages; one has been already started. The newly planted trees will be cared for and the villagers will be encouraged to plant more. And not least of all we shall work with the Panchayat and the local Panchayats that they may soon work as experienced and responsible groups. The villagers have said they would go only to their own Panchayats or to their common Panchayat when there was trouble. But we must go a long way before the Panchayats will be able to command the confidence of the people at every point.

We "enjoyed our short stay" in the villages. It "taught us a great deal". We "felt that we should have stayed longer." We were "able to win the affection and love of the majority of the villagers." This was the response of Gandhi Gram as it went to the villages for Gandhi Jayanthi. My experience is that this is the common experience when interested youth go to share some little thing with those who have so little to share. But we must never fool ourselves that we can do much in such a brief time in the villages. On the other hand, if such a programme is fitted thoughtfully into a long-term programme the special contribution can be of no little value. The greatest value comes to the youth who go to the village. However, the villagers also profit and especially if there is wise and selfless leadership. Many years ago I chanced to be one of the weak members of such a college team that went to a village in Southern Minnesota during our vacation season. Our work was one of inspiration. We conducted religious services. Young and immature I have always felt that we could not have done much although the experience was very valuable for my own development. But sometime later I chanced to meet a leader of that village. He told me that the coming of our small college group had started a small revival of religious living and nearly one hundred people had joined one or the other of the churches in the village as a result of our coming. If that was true it was only because good preparation had been made for our coming and a thoughtful followup programme was carried on. So as our Indian students go to the village to render some small service.

Our reverence for Gandhiji must take solid form. When we celebrate his birthday it must be more than a mere public meeting. When we would carry on his memory it must be by means of something of far more substance than a mere statue or picture. Gandhiji has given us a task for not less than a lifetime. If we truly take him in earnest, if we truly admire him and his life then it is for us to implement that way of life—a way of life that has meaning not only for India but for all the world. Some of us may have the privilege of giving full time to the carrying out of the programme which his way of life implies. Others will strengthen our hands as they are able to do. But whatever our part we shall be at the job of bringing a "casteless, classless society to this selfish, divided world, based upon a "living faith in God." And each of us will be living the kind of life this faith implies in our own way and in our own particular sphere.

PROBLEMS IN INDIAN AGRICULTURE

By: H. C. AGARWALA

OUR village economy has changed. Yet it is pre-dominantly agricultural. The organisation and management of agriculture must therefore be studied. The characteristics of organisation and management are best understood by studyiny their problems. Nine problems may be mentioned.

Organisation and Management of Agriculture-Problems

Firstly, the area cultivated by a farmer consists of a number of plots which are unusually small in size and are scattered about the village. It leads to more expenditure. It becomes difficult to arrange for the irrigation facilities. Proper and timely attention cannot be paid. The farmer has to run from plot to plot for ploughing, sowing, manuring, weeding, and for protecting the crop from being damaged by the birds, animals and even men.

Secondly, the cultivator does not have good seed. He grows the local varieties. He tries to keep a part of what he produces for use as seed next time. But more frequently he depends on the village Banta or Zamindar for the supply of seed. These agencies are not bothered about supplying the better varieties. The government seed stores have been opened, but they have not served the purpose. Either those in charge of these stores have proved to be corrupt, or the supply has been inadequate. Cooperative seed stores have succeeded to some extent, particularly with regard to the sugar-cane. Little attempt has been made to popularise the better varieties of seeds which are produced after considerable research by the various government agricultural research departments. Under the new development Plan in U.P., the district development associations are to take charge of the Government seed stores.

Thirdly, the cultivator is not better advised and convinced as to what crops to grow and in what order. Proper selection of crops can help to maintain the fertility of land and reduce the manure-requirements. Proper selection can also secure a supply of better and more well-balanced food, as also a greater income from the sale of the crops. The cultivator depends on what he has learnt from his father and on the innumerable sayings current in the village regarding crops. Generally he follows a particular system of crop-rotation. He also raises mixed crops. He mixes the seeds of a number of crops and sows them. He harvests the crops either at different times or together. The problem of crop rotation has received some attention from the government, but mixed-cropping has been neglected. The cultivator also is not sure whether he should combine cropping with animal-husbandry, and how to do so. This is called mixed-farming and has still to be popularised.

Fourthly, the cultivator does not have facilities for proper and adequate manuring. He tries to preserve the cow dung. But a large part of it is used by him as fuel due to the shortage of wood-fuel. Whatever he does conserve also loses a large portion of its vitality on account of the wrong ways of conservation. Besides the cow dung, he also requires other natural and artificial manures. He can grow certain leafy plants, plough them in the field and thus have green-manuring. He may convert the refuge into manure. He may buy certain chemicals like ammonium sulphate and phosphates and use them as manure. These are called artificial manures and are not produced in India. The government is taking steps to develop the production of artificial manures.

Fifthly, the tools and implements available to the farmer are generally made of wood and a few pieces of iron. The efficiency of the plough, the hoe, the sickle, the water-lift etc. needs to be, and can be increased to a great extent. There are innumerable forms and modifications of these in use all over the country. Even a comparative study of all forms would enable improvements to be made. No such study has been undertaken. For many years the engineering section of the U.P. Agriculture Department has concentrated its attention only on machinery for tubewells. Of late, the attempt is being made to provide for cultivation with the help of tractors owned by the government. But ultimately, our welfare lies in improving the tools and implements being used by the farmers.

Sixthly, the bullocks and buffaloes, who draw the plough and the leveller and who thresh the corn, are lean and thin, weak and emaciated, and of an inferior breed. The cultivator would benefit to a greater extent if he maintained one pair of strong bullocks. For this, two remedies are necessary. The breeding of the inferior cattle be stopped. The farmer should be made to combine crop-production with fodder-production. In other words, he should undertake mixed-farming. The Experiments undertaken about mixed-farming at Meerut, Bareilly, Lucknow and Gorakhpur indicate that the profits are atleast twice that under ordinary farming.

Seventhly, the farmer does not have full irrigation facilities. He generally depends on the monsoon. Canals have been constructed in western U.P. Tube-wells also have been dug in western U.P. The rate of progress has been slow. Besides, canals and tube-wells overlap. They serve the same area. They would be of greater service if they had been properly distributed. In addition, the canals are not properly drained. A substantial quantity of water is absorbed by the canal bed and it reappears in localities on lower levels. This causes water-logging. Thus, not only land is lost to cultivation but these areas become breeding places for the mosquito. The distribution of the canal water is neither in time nor in adequate quantity. The farmer pays for the canal water in proportion to the area of land, irrespective of the amount of water received. It is therefore not surprising that wherever there is no canal, the villagers are always crying for one; but wherever there is a canal, the villagers are always cursing it.

Eighthly, the farmer also experiences a shortage of labourers at the time when he requires them most, such as at the time of ploughing and harvesting.

Lastly, the organisation and management of agriculture is not up to the mark because of the undesirable situation in regard to the land system, agricultural finance and the marketing of his crops. There are also too many persons ready to cultivate land, because other sources of employment do not exist adequately. The problems of land-tenure, finance and unemployment have already been dealt with in the last chapter. As regards marketing, the cultivator does not know the market prices. He cannot postpone the sale of the crop because he must get money to pay the rent and to meet the debt-obligations. Besides, he is generally bound by a promise to sell the crop to the *mahajan* from whom he takes loans. Even if he is free from such a promise, he has little transport facilities. In addition to low prices, the purchasers use wrong weights and measures, and make a number of illegal deductions from the price on account of weighing charges, accounting, coolie charges, refraction, charity etc. Therefore, the cultivator fails to get but a low price for his produce. The fundamental difficulties are that

he is illiterate, unorganised and financially weak. Cooperative marketing societies would be the best solution for this sad state of affairs, but these have not been developed.

Remedies

In a way the defects themselves indicate the remedies. The holding of the cultivator must be consolidated compulsorily. Even then more than half of the holdings would be too small in size to be profitable. In order to increase the size of the holding further, people should be transferred from agriculture to non-agricultural occupations. In other words industries, particularly rural industries should be organised.

In order to make the best use of land, the soils should be surveyed. The present knowledge regarding the different kinds of soils is not sufficient and uniform. While greater attention has been paid to the laterite and the black soil, alluvial soil is not properly defined. There is a meagre information about the desert soils, the forest soils, and the peaty and marshy soils. A correct knowledge is essential to grow the best crop. A careful study must also be made of the system of mixed cropping to suggest improvements. In order to convince the farmers about the new improvements, the mixed farming, or about the use of a new variety of seed, demonstration farms should be started. Demonstrations should be given using the methods that the cultivator does. Then the cultivator would believe in what he sees. Once he is convinced, he would readily adopt the new methods. These demonstration farms should also be sources of supply of improved seeds.

The demonstration farm is also important for teaching the farmer how to conserve the cowdung and how he can profitably use the green manures. Artificial manures (fertilisers) have to be produced inside the country. The Government of India is planning a number of factories. One of them shall be at Sindri in Bihar. But artificial manures require the supply of greater irrigation facilities. We require more canals. For these canals, a better way will be to collect and use the surplus water of the rivers during rainy season behind dams and use it in the off-season. The water falling from the dams can also be used to produce hydro-electricity. Many such schemes are being undertaken in the country, on the rivers Damoder, Mahanadi, Nerbuda, Krishna, Tungbhadra etc. In U.P., the Rihand Dam near Mirzapur is most important.

It is also important that the price charged for the canal water should depend on the quantity of water supplied and not on the area irrigated. Besides, more wells should be constructed. If electricity becomes available, it shall be better to coustruct tube-wells.

In order to improve the cattle, attempt should be made to improve the breed and reduce the reproduction of the inferior breeds. Just as the provincial government has decided to segregate the dry cattle, similarly it may collect the inferior bulls. Superior breeds may be supplied from cattle breeding stations, or cooperative cattle breeding societies may be started. By introducing the system of mixed farming, the supply of fodder for the catttle can be increased. Experiments in mixed farming have been successfully carried under the Indian Council of Agricultural Research in U.P., C.P., Sind and the Punjab. Mixed farming has meant a hundred per cent increase in the net profit from farming and also better diet for the farmer's family.

To enable the cultivator to secure better prices, the system of cooperative marketing should be developed. The difficulties of the marketing societies have been lack of loyalty on the part of the members, lack of trained persons, difficulty of storage and finance. The provincial government can help by

spreading cooperative education and training. They can also make grants and loans for the construction of godowns, as has been done in Madras, Bombay and Mysore. Or, they may develop warehouses, as is being done in Bombay, and make over the godowns constructed during the World War II for the Civil Supplies Department to the warehouses. Goods can be kept in the warehouse and the receipts issued for them could be used to get financial help from the Reserve Bank of India.

Besides, the marketing operations in the mandis should be regulated. The establishment of regulated markets would result in a fair fixation of prices, use of correct weights and measures, less exploitation and better staying facilities for the farmers. Before the war, the U.P. Government had under consideration a bill to establish regulated markets, but it has not reached the statute book as yet.

Small and Large Scale Farming

It has already been mentioned above that the tools and implements of the cultivators need to be, and can be improved. Not infrequently, it is also argued that power-driven machines such as tractors, harvestors and combines should be used. This assumes that large scale farming is better than small-scale farming.

Large scale farming secures marketing and technical economies. The farmer can buy his requisites such as seed, manure and fertilisers cheap. He can sell his products at more favourable prices. As he shall have large quantities to sell, he can even grade the produce and secure higher prices for the better grades. Similarly, he can purchase and use agricultural machinery, such as tractors and combines. Also, one man can concentrate on supervision and management and leave the unskilled manual work to paid labourers. But the labourers would not be concentrated in a small area. This does not happen in mill. Scattered workers make supervision difficult. Also, every crop cannot be grown on a large scale. Only crops which do not require personal attention can be profitably produced. Agricultural operations depend on season and sudden variations would necessitate immediate reallocation of work. This is not possible if the workers are scattered all over a big area. The agricultural labourers are also less submissive and more difficult to manage than factory workers. As a result, it may well be said that large scale farming can be successfully adopted only where we have plenty of new land, plenty of cheap labour, and such climatic and soil conditions that we can grow a crop which does not require personal attention.

The disadvantages of large scale farming are the advantages of small scale farming. In this case, the farmer can do away with hired labour. He can easily adjust his operations to changes in seasons. He can pay personal attention to the crops. He is likely to gain more, if he decides to produce fruits and vegetables. It is less profitable in the case of cereals such as wheat, rice, jwar etc. if the area is not sufficiently big. Small scale farming is practised in countries like India and China and about three-fourth of the cultivated area is devoted to food-production. Yet the farmers carry on, because they cultivate more for subsistence than for profit.

The advantages of large scale farming become the disadvantages of small scale farming. But the small scale farmers can overcome these disadvantages by forming cooperative societies for purchases and sales, ploughing, irrigation and harvesting, and also finance. Yet the farms or holdings in India are too small to allow the farmer even to eke out a bare subsistence. Their size must be increased.

Mechanisation of Agriculture

Does the discussion about the scale of farming mean that there is no scope for tractor farming? The answer cannot be a small 'No'. There are areas where large scale farming is being carried out. There may be areas like plantations where large scale mechanical operations may have scope for application. Tractor farming is also practicable for reclaiming and opening up the Tarai land, and for eradicating *Kans* from the kans-infested area. But there is tremendous scope for improving the tools and implements used in agriculture. It is wrong to say that the Indian cultivator is averse to adopting new and improved mechanical devices. The Indian cultivator has readily adopted the iron shoe for his plough. Iron cane-crushers and the hand-driven centrifugal machines have also rapidly come in vogue. If a new machine is not costly, if it is simple and easy to work with human or bullock power, if it can be repaired in the rural area and if its use shall benefit his earning power, the cultivator would readily adopt it.

The engineering section of the Agriculture Department in U.P. has paid too great an attention to appliances for boring wells. It has not even made a comparative study of the various types of ploughs and other tools and implements used all over the province. There is the necessity for a cheap harvester, thresher and winnower. The water-lift has to be improved. The design of the country cart has to be improved. It is very likely that after some years cheap electric power shall become available in the rural areas. That shall open the scope for machines driven by electric power. Oil-pressors, milk separators and churns which can be worked economically in the cultivator's home have yet to be invented.

It must now be clear that by mechanisation of agriculture we mean the improvement of the existing tools and implements and the introduction of the use of machines which would help the farmer in the home, at the well, in the field and on the road. There is tremendous scope for such mechanisation. The farmer is not averse to mechanisation. He readily tries to adopt a new device as soon as he is convinced. The Indian cultivator is intelligent and his intelligence would allow only really good devices being introduced. The introduction of costly machines would be slow due to lack of capital and technically trained men. It would be better if we keep another factor in view. Most of the machines are labour-saving. Their introduction would release labourers from agriculture. These must be employed in some other occupation. The rate of mechanisation should be such that the released labour force gets employed elsewhere.

Commercialisation of Agriculture

Beside mechanisation, there is another aspect of Indian agriculture which requires our serious attention. The British were interested in exploiting this country. They wanted to make India a supplier of raw materials and a consumer of their manufactured products. Consequently, they paid more attention to the commercial crops such as cotton, jute, tea, and sugar-cane, groundnut. These are non-food crops. Between 1910 and 1932 the foodcrops increased by 33% but the non-food crops increased by 66% in value. Even by quantity, the increase under commerical crops has been double the increase under food crops during the first thirty years of the present century. During the British rule, some area has been brought under

improved varieties. Here too the same tendency to favour the commercial crops is evident. Out of the total area under different crops, the percentage area under improved seed is 80%, 50% and 19% for sugarcane, jute and cotton, while it is only about 21%, and 4% for wheat and rice. It is high time that this tendency be changed. We must ensure self-sufficience in regard to the production of food not only on a national basis but as far as possible on regional and local basis. The production of specialised commercial crops should come next to self-sufficiency with regard to food.

THE EAST AFRICAN GROUNDNUTS SCHEME

Turning 3,250,000 Acres Into Farmland

By: P. J. A. BATHURST

By the end of July this year the first token crop of 7,500 acres had been harvested on Britain's great Government project for the mechanised production of groundnuts in East and Central Africa. This first crop marks the start of a six-year programme of land clearing and development whereby some 3,250,000 acres or, 5,000 square miles, of waste and derelict African bush and woodland will be turned into productive farmland.

The scheme aims at the production of 600,000 tons of shelled groundnuts a year by the end of the development period, with an oil equivalent of some 250,000 tons.

The last 10 years have seen a radical change in the pre-war equilibrium of supply and demand. World supplies of oils and fats have fallen sharply and world demand has increased. Sources of supply have been slow to recover from the ravages of war. The post-war resumption of supplies from the Far East, for instance, has proved particularly disappointing. Exports from Manchuria have fallen from a pre-war equivalent of half-a-million tons of oils and fats a year to a mere trickle of a few thousand tons a month of soya beans. Political unrest has reduced Sumatra's pre-war export of 220,000 tons of palm oil in 1938 to practically nothing at all.

The world shortage of other staple foodstuffs, such as cereals and rice, reinforced by wartime inflation of money incomes, has led to increased domestic consumption and a corresponding fall in the export surplus. Western European production showed a 1947 deficit of 1,000,000 tons on 1938 and, in spite of good crop prospects this year, there will still be a 1948 deficit of half-a-million tons.

World Fat Deficit

The effect of these various factors is a current world deficit of some 2,750,000 tons of oils and fats as compared with 1938. This figure, however, does not take into account the steady and, from the point of view of food supplies, alarming increase in world population. In 1938 the average per capita consumption of oils and fats for the whole world was 21.4 lbs a year. Today, 10 years later, after allowing for 35,000,000 war casualties, world population is estimated to have increased by some 200,000,000, and world per capita consumption has dropped to

17.5 lbs a year. And even the pre-war level of consumption is seen to be abysmally low when measured against a pre-war average per capita consumption of 70 lbs a year in the United States.

Hence even if pre-war sources of supply were fully restored—and there is little reason to believe that they can be—there would still be a critical shortage of oils and fats unless new sources of supply were opened up.

The United Kingdom Government's plan for the mechanised production of groundnuts in East and Central Africa is designed to meet this challenge. Its goal of 250,000 tons of vegetable oil a year will, of course, go only part of the way towards meeting world needs. Its deeper significance lies in serving as a prototype for methods and experience that can be applied to other tropical areas.

The 3,250,000 acres selected for clearing and agricultural development lie principally in five large blocks of land in Tanganyika in East Africa, and in smaller, more scattered areas in Northern Rhodesia. Much of the country is sparsely populated or completely uninhabited, waterless and ridden with the tsetse fly. It has never been mapped with accuracy and is to a large extent unexplored.

Soil Conservation

It is the intention to employ the most modern methods of mechanised and scientific agriculture. Groundnuts, also known as peanuts, have been selected as the principal crop. They yield 42 per cent. edible oil when crushed and a cake of considerable protein value as cattle feed. The whole cycle of agricultural operations, from preparing a seedbed to planting, and the final harvesting of the crop will be mechanised by using fleets of tractor-drawn implements.

Every care is being taken to avoid exhausting the fertility of the soil, thereby creating a dust bowl in East Africa. A comprehensive programme of scientific research will determine the best system of crop rotation and the fertiliser requirements of the different types of soil. Where plant nutrients are found to be deficient they will be added and minerals taken off the land by cropping will be replaced. Grass leys are included in the rotation to improve soil structure and to add organic matter to the soil. Sound principles of soil conservation form an integral part of the farming practice.

A cardinal feature of the scheme is careful regard for the interests and welfare of the local people. Indeed its long-term benefits will accrue to them. The permanent agricultural labour force is to be housed in model villages on projected 30,000-acre farms.

These villages will serve as centres for the introduction of improved standards of African housing, health, nutrition and welfare. It is hoped that the traditional unskilled African migrant will thus be trained into a stable and skilled worker. They will be encouraged and trained to undertake every type of skilled work which they can learn and master. In fact, the ultimate goal is that the scheme should be operated entirely by the Africans themselves, perhaps on a co-operative basis.

Race Against Time

The task of getting the project under way was entrusted to the United Africa Company, a subsidiary of the United Kingdom combine of Unilever, acting as managing agents for the United Kingdom Government. The advance party of technicians and specialists arrived in Tanganyika by air from London at the beginning of February, 1947.

The area chosen for initial development lay in the central province of Tanganyika,

240 miles inland from the port of Dar-es-Salaam and a few miles north of the central railway line. A tented camp was established in the lee of the Kongwa Hills. Then followed a determined race against time to build up the necessary supplies, equipment and organisation to prepare as much land as possible for planting before the onset of the rainy season in December. The ensuing months of incessant exertion and effort uncovered one by one the formidable obstacles to be overcome in carrying out a tremendous development plan of this kind in remote and undeveloped areas. There was congestion of port and docks. There were shortages of rolling stock, building materials, skilled artisan labour, water and transport.

There were unavoidable delays in the shipment and arrival of the heavy 100-130 horse-power crawler tractors and bulldozers needed for flattening and clearing the bush. Most of these were second-hand, war-worn machines from the Philippines, Egypt and the United Kingdom. Mechanical breakdowns led to a high initial rate of unserviceability, for want of adequate supplies of spares and heavy repair workshops equipped with welding plant and power-operated machine tools.

The extraction of the long interlaced rubbery roots from the ground after the surface bush had been razed proved at first an intractable problem. New root-cutting implements had to be designed specially for the job, with tripping rakes to get the debris out of the ground. Thus it was only possible to plant some 7,500 acres with groundnuts by the end of the first planting season.

Vast Engineering Project

In April this year, the responsibility for the control and carrying on of the project passed over to the government-sponsored Overseas Food Corporation which had been set up by an Act of Parliament specially for this purpose earlier in the year. The Overseas Food Corporation is now pushing ahead with the 1948 development programme, aiming at a target of some 100,000 -150,000 acres ready for planting by the end of the year.

A picture of the problems ahead has been given by Major-General Desmond Harrison, wartime Engineer-in-Chief to Lord Mountbatten's South-East Asia Command, and now resident member of the Overseas Food Corporation in the East Africa. Outlining the scheme to a recent London conferenc of civil engineers, he said:—

"Although this is primarily a vast agricultural project, it is during its development state nothing more nor less than a vast engineering project. It implies the construction of a new port with deep-water berths and facilities for bulk handling, and the construction of about 150 miles of railway, either in spurs off the main central line or a main line to open up the southern province. It means literally thousands of miles of new roads and the accommodation of about 2,000 Europeans and 60,000 to 70,000 Africans.

"It implies the construction of port installations, storage depots, hospitals, workshops and agricultural installations on a large scale. The water supply problem alone is one that demands immense effort and there is no natural source of power-supply within reach. Remembering, in addition, that the industrial development of East Africa has hardly begun, that there is no potential in existence to cope with the immense industrial demands which the scheme will make, and the fact that, however intelligent they

may be, the Africans who have to work this scheme are, as yet, almost uneducated and certainly untrained as tradesmen or artisans, it will be seen that there are many difficulties which have to be tackled and overcome before the scheme can succeed."

Faith in Success

The conviction that it will succeed was expressed by the United Kingdom Minister of Food to a gathering of business men after his visit to East Africa in June this year:

"The condition which gives me absolute assurance of the ultimate success of the scheme is the spirit of the men and women engaged in it. They are pioneers, and the life of the pioneer is never an easy one. They are suffering very considerable personal hardships, and they have to bear the strain and anxiety of all the manifold difficulties, snags and delays to which any such major enterprise as this must always be subject. The truth is that once again Britain has been able to find a body of men and women, mostly young, who will undertake a supremely difficult and arduous task and carry it through—come hell or high water".

GROW MORE FRUITS

PART II B

By: B. L. CHOUDHRI

(Continued from October, 1948 issue)

8. GUAVA, Amrud (Psidium Guyava)

This is one of the hardiest plants and is very commonly grown by villagers. This is a big shrub or a small tree that bears fruits twice a year i.e. July to September and again from November to February.

Varieties:-The fruits are of various types and shapes. Of course, there are two famous and standard types:-

1. *Benares* and 2. *Allahabad*. The Benares variety has round fruits, the seeds of which are not very hard and can be chewed. The following five types of Allahabad varieties have been described by Sherrard Smith:-

" 1. 'Safeda'.....Round, smooth-skin, flesh white, sweet.

2. 'Karela' .....Elongated, ruffled surface, flesh white, sweet.

3. 'Hafsi' .....Round, smooth skin, flesh red, sweet, but not to the same extent as the two former.

4. 'Chittidar'...Same as safeda but with spotted or mottled skin and said to be sweeter.

5. 'Seedless'.....A sort of 'Kerela' type, but as the tree is not a profuse bearer, nor do ale the fruits on the tree attain a large size, it is not to be recommended for commercial planting".*1.

"The seedless guava is a mis-shapen looking object but has a small cavity where the ball of hard seeds should be "*2.

Soil:-Sandy medium soil is best suited for guavas. They are found to flourish very well on the river banks. The tree being a hardy one can to a great extent tolerate soil and other handicaps. There is no other fruit plant so tolerant to soil conditions as is this. It can be grown on soils varying from clay to those of sandy

1- The Guava Bulletin No. 8 Fruit Series Agri-Dept, U.P. 2. Garden New Sheet No. 41, July 47.

nature. The tree is noted to fruit even in soil which are too poor and unsuitable for other fruits. Any soil which provides hold for tree roots to make the tree stand and can retain some water will grow this tree.

Propagation:–Plants are propagated from seed 'Grafting' and 'Gootee'.

Plants raised from seeds come true to the type but bear fruits that have more seeds. They take five to seven years to fruit.

Grafted trees are good and hardy. They begin to give fruits in the 2nd. or 3rd. year. Grafting is done on seedling guava plants. The method is exactly like the one used in mango inarching.

'Gootee':–Plants are raised by gootee and by suckers too. The 'gootee' operation should be performed during the rainy season. Suckers for plant propagation should only be taken from the self rooted trees.

Planting:–Planting should be done during June–July. About two years old plants should be selected for the purpose. The distance between the plants should be kept from 15 to 18 feet.

Manure:–Manure the plants every year before the rainy season with a mixture of cow-dung manure, leaf-mould and bone-meal. A dose of powdered oil-cake may be given in September.

Irrigation:–Plants should be irrigated once in a fortnight during the summer and once a month during the winter season.

Prunning:–It has been noted that the prunning of guava improves their bearing and the size of the fruits. Old trees that do not properly fruit must be severely prunned. For prunning to rejuvenate as much as two thirds of the entire growth is removed. Root prunning to encourage growth of new roots is also recommended. The roots may be cut to half of their original size. This is a drastic operation and should be performed with due care and reserve.

Season of fruiting:– Like orange guavas too have two main seasons of flowering:–

(1) *Amiya bahar* i.e. flowering with the mangoes in February—March. This gives fruits during the rainy season. The second flowering occures in *'Mrig Nakshatrya'* i.e. in June; hence is called as *Mrig Bahar*. This gives fruits during the winter season. There is a greater demand for the fruits in the winter season; hence attempts should always be made to get this crop. It is always better to get one crop a year. This lengthens the life of the garden. *'Amiya bahar'* can be easily prevented by copiously watering the trees in January. This results in excessive vegetative growth. The trees are then rested in March—April. No water is given to them till the soil is completely dried up and the plants shed the leaves. They are then manured and watered. A profuse flowering will be the result.

Life of guava garden:– A guava garden gives fruits till about twenty five years when the tree should be cut down. A new garden may be started about five years ahead of this so that the perpetuity of getting fruits is maintained.

"A fungus disease is fatal and when lips show signs of die-back several strong solutions of permanganate of potash be applied. A borer in the stem is also to be watched for. Fruit too get attacked by a fruit fly." (G.N. Sheet, July 47).

9. INDIAN PLUM, Ber (Zizyphus jujuba)

It is a very hard plant the variety of which is found growing as a weed and *jungli* plant all over the country.

Propagation:– The plants are raised by seed or by budding. The best method is to grow the ordinary type of plum at a place where the plant is required to be grown permanently. Seeds are sown in the pits of 2' x 2' x 2' filled with a mixture of soil and manure. The pits may be spaced at 25' to 30' apart. On this plant, when it is about one year old, budding may be done. Healthy buds for this purpose are taken from any good type of plant. The best time for budding the plant is April–May. The bud takes about one and a half month to sprout. It begins to put up growth as the monsoon sets in. When it is grown more than two inches the portion of the 'stock' plant above the joint should be cut off. Soon after this the new shoot will start growing very vigorously and if allowed to grow untended it will become leggy and likely to snap. Its top should hence be cut down when the shoot is about 9" to 12" long. This will result in branching and bushy formation.

Varieties:–Allahabad, Benares, Nagpur, Surat and Lucknow are the most popular varieties. Benares variety is the most famous of all these.

Soil and manuring:– It can be grown in any type of soil. Very sandy and light soil, of course, should be rejected.

Give the following mixed manure every year just before the rainy season, some time in the last week of May or the first fortnight of June.

Cow dung manure.....1part.
Bone powder, cake and Ash.....1part.
(equal proportion of each).

The amount of manure to be applied should be decided according to the age and growth of the plant.

Irrigation and Prunning:— It is not necessary to irrigate the plants. Irrigation may be given during the first year when the budding is done. Irrigating the plants when the fruits are developing is beneficial and may be practised.

The plant begins to bear after two years. It requires severe prunning every year after the fruits are fully gathered. Cut off all the branches thinner than ½" to ¾". This is essential to get a new flush of growth and fruit bearing shoots.

Improving wild varieties:—'Ber' at various places is found to grow as a wild plant and a nasty weed. These plants can be best taken advantage of by budding improved types of scious on them. Gokhle suggests, "The tree should be cut off flush with the ground, and some trash should be burnt upon them. This produces very strong shoots. These can be budded in the following month of May. These plants have got an already established root system and can give fruit from the very first year." It is, however, better to take fruits from the second year.

10. JACK FRUIT, Kathal (Artocarpus integrifolmus)

This tree is mainly grown for getting raw fruits for vegetable. The ripe fruit is very sweet but has too strong an odour. The fruits are either round or oval in shape with a very rough and thick rind. The tree is indigenous to our country and is found to grow at various places as a jungle.

Soil:—'Kachar' and 'Sahra' or any other medium type of soil like the sandy loam is well suited for its cultivation. The tree is susceptible to water logging and at times even established plants succumb to this unfavourable condition. Well drained rich soil is congenial to its growth.

Planting:—Make pits at about 35 to 40 ft. apart of the size of 3 ft. x 3 ft. and fill them with soil and manure mixture. Sow seeds in these pits at the beginning of the rainy season. This method of sowing seed in situ is recommended because the percentage of mortality in transplanted trees is very high. If desired plants may be grown in the earthen pots (one plant in each pot) and then transplanted later to the permanent site. The plant need not to be tossed out of the pot but that the pot be sunk in the pit after breaking it carefully without damaging or crushing the roots.

The seeds lose the germination on being kept long. Only fresh seeds should therefore be sown.

Proper care of weeding and insect pest be taken when the plants are young. Irrigation will be required till the plants are about 3 years old. After this stage they get well established and grow even without irrigation. For the bearing trees irrigation at the time of setting of flowers is beneficial.

Purchase of seed:—Very good type of seeds are supplied by the Royal Horticultural Society. If the Society is informed in March-April of the seed requirements it can arrange to supply fresh seed in good time for sowing.

Varieties:—There are no standard varieties. However two classes of this are distinguished, one with firm, sweet fruit and the other with softer and acid pulp. (Hayes). The former of these is called as *Khuja*. Its fruits are of larger size having larger quantities of edible pulp which is thick and firm. The seeds are of smaller size and the outer skin of the fruit is smooth. The latter variety is known as Ghila having small rough skined fruits containing less of pulp which is thin and watery. There is also a slight difference in the leaves of these two. The leaves of *Khuja* in comparison to those of *Ghila* are of rounder form.

Manuring:—Manuring should be done every year after the crop is over. Cow-dung manure may be given in June-July followed by a top dressing of oil-cake in September-October.

Prunning:—Dry and dying branches need only be cut. An old and less fruiting tree may be subjected to drastic prunning.

Fruiting:—The fruits are borne only on the thick branches of the tree and 'upon stout footstalks projecting from the main trunk'. There is a common belief that in old trees fruits are even borne on the roots. Vyas and Ferminger refer to it but Hayes refuses this. He is of opinion that this belief has gained ground because of the "bearing of the fruits on the lowest part of the trunk, which may be below the surface of the soil."

The tree begins to fruit in about eight years. The tree flowers in November and fruits are obtained in the summer season.

Use:—Those who cannot eat the ripe fruits, as they are, can try its jelly. It is made by boiling ripe fruit pulp in milk. It is then strained and allowed to set. Matured fruits are used for vegetable and pickles. The seeds are also used as vegetable, which taste as good as potato. The seed powder serves as a poor man's flour.

The tree is a profuse fruiting one and is very profitable to grow where favourable prices are obtained. Fruits are of enormous size varying from 8 to 20 seers, or even more. It is easy to book them for market, as they do not need any packing. A few plants of this deserve a place in all big gardens.

11. LICHI. (NcPhelium Lichi)

It is an evergreen tree of handsome foliage. The tree is most beautiful and deserves a place in every garden if not for its fruits then at least for its graceful shape. The tree begins flowering in February and gives fruit during May—June. The tree, therefore, is not a success in the plains where the summer months are very hot and the 'loo' (hot-summer wind) is prevalent. The tree flourishes well in those places of humid climate where temperature varies from 70.F to 100 F. from February to May, June, i.e. during the period of flowering and fruiting of the tree. The tree seems to be very partial to those climatic requirements and fail to yield under conditions other than these. Effects of hot summer winds are partially eliminated by providing proper wind breaks.

Soil:- The tree grows well in alluvial loam soil rich in calcium contents.

Taking soil and climatic requirements of the tree into consideration * Vyas is of the opinion that, "It is probable that its cultivation could be extended on a profitable scale, even in areas which are less suitable climatically but where canal water can easily be obtained or well water is within easy reach for heavy irrigation during the fruit developing season, provided that ample and systematic wind-break planting was adopted at regular intervals in the orchard and provided that, if found to be deficient, lime was added in the course of cultivation".

Propagation:-Plants are raised from seed, layering 'gootee' and grafting. Raising of plants by 'Gootee' is more convenient and is commonly practised. In practice it has been found that better results are obtained by not applying earth ball to the twig immediately after removing the ring of bark. The twig after removing 1½" to 2" broad ring of bark, it is left as such for two to three weeks' till a good swelled growth is noticed near the cut end of the bark on the twig to be separated. If in two weeks no growth is visible it is better to discard it rather than making an attempt to get a plant out of it (Vyas). On this swelled growth earth is applied and the usual process of ***gootee*** is followed. The best period for the operation is April—May and September, October. It is also carried out in the rains to avoid the problem of keeping the earth moist but in that case the percentage of success is not so well marked as in this season the root growth is not vigorous as in summer or autumn.

Varieties:-Mc. Lean's, Rose scented and Muzafferpore are the best varieties.

Planting:-Select plants from 6 months to 2 years of age. No plants older than 2 years be selected for planting. Planting is generally done during the beginning or the end of the rainy season. In places of heavy rainfall, autumn planting is better. Plants may be spaced at 25' to 33' apart.

Irrigation:-Regular irrigation from after the close of the rains to its break again is necessary. Copious watering in the summer when the fruits are swelling is very essential.

Manuring:-Vyas recommends a mixture of leaf mould or old farm yard manure fortified with advantage by a dressing of 3 seers castor cake or 2 srs. neem cake, 2 seers bone meal and 4 seers wood ash per tree, the crown of which is about 18 ft. diameter, in December when the new shoots begin to appear. A dressing of fish meal or fish at the rate of 3 to 4 seers per tree may be substituted for the above dressing, Lancaster suggests annual application

* The Lichi-by N. D. Vyas,-Department of Agriculture, U. P. Fruit Series Bulletin No 12.

of general industrial and social progress and of the rise of industrial progress.

One pre-requisite of each step in efficiency in agricultural production is to increase the output per person engaged in non-agricultural occupations. Increase in proportion of industrial and Urban population is an indication of efficiency of agricultural system in most of the Western Countries, but it is not so in India. Inspite of the increasing proportion of population in agricultural occupation the poduction of food-stuffs in India is not sufficient to maintain its own population.

Agricultural improvement and efficiency take many forms and the most important ones are these :—

Improvements in means and methods of cultivation; discovery, selection and breeding of plants for specific purposes; selection and breeding of animals; improvements in means and methods of harvesting and storing products; changes in sources of power; control of disease and insect pests to secure certainty or regularity of yielding crops; control of diseases of animals; Discovery of mineral and industrial sources of plant requirements, and improvements in methods of preparation for use; increase in knowledge of animal nutrition, and of principles of selection and breeding of plants and animals.

Modern wars have stimulated progress in agriculture in most of the Western Countries and the application of scientific knowledge and of capital and mechanical power have greatly been increased in most of these countries. The process of making agricultural production more certain, economical and efficient is a continuous one and the net result is the increasing productive capacity in agriculture. But the problem of to-day is to apply those improvements to our agriculture also. Agriculturists must always use the criterion of output per unit of human labour, per person, per man, per man day and per man hour and it is on these the average standard of remuneration and standard of living depend.

Mechanical development in U. S. A.

One of the most important methods of agricultural improvement has been the introduction of different farm-machines. As a result of engineering advances, there exists farm machinery, suitable even to the small farms. The one country which has tremendously increased the technical progress and mechanical equipment in Agriculture is America. Some of the typical machines are worth mentioning.

The Tractor cultivation has become very common. The new automatic pick-up hay baler, the self-propelled Combine and Cotton Picker, the harvester-thresher are the most important. The Pick-up hay baler makes a one man job, of what has usually been a four-man job and this makes unnecessary for the farmer to draft his family for field work. Besides this, Baler eliminates the use of two other machines. The Mechanical Cotton Picker is the result of more than 40 years of engineering work. It can make an important contribution towards reducing the cost of production. The mechanic will harvest in a day about as much Cotton as could be picked up by forty to fifty hand pickers.

The greatest effect of technological change in farm machinery is the manifestation in soil conservation work. Improved farming practices have been developed by the soil conservation service which not only helps to preserve top soil but also aids in rebuilding its fertility. Refrigeration system like electrical equipment is another mechanical improvement which made the work of the farm women easier. Without mechanisation the American farmers could not have produced the crop necessary to sustain their war effort and maintained their large population. On thousands of farms, farmers, their wives and daughters with the aid of machinery carried on successfully, despite the absence

of young men who went to war, and produced as much crop, sometime more than the quantity which was being produced previously. It is chiefly due to technical changes in mechanical equipment. That made even small farms more secure in America and this improved their ability to compete with larger farms, making them at the same time as efficient business concerns and better places to live.

Russia

The agriculture of pre-revolutionary Russia was completely under the mercy of the elemental forces. Farms were small, farming methods were extremely on a low-level and harvests were unstable and fluctuating. After the revolution the land was nationalised and turned over to the peasants free of charge. The peasants voluntarily began to unite their tiny holdings into large collective farms and this made it possible for them to apply scientific method of farming and to employ tractors, harvestor combines and other up-to-date agricultural machinery.

The number of Collective Farms rapidly grew from 1,690 in 1928 to 217,000 in 1945, embracing more than 85 percent of the peasant holdings. It is due to this system of Co-operative Farming that Russian Agriculture is one of the most scientific and most highly mechanised occupation and is run on the largest scale of any in the world.

Mechanisation of agriculture in Russia does not create a superfluity of labour. On the other hand, the labour power released by the machine is absorbed in live-stock-breeding, vegetable and fruit-growing and other branches of Collective Farming. Soviet Farmers have built their collective farms on ashes and ruins and more than 26000 tractors and 40000 other agricultural machines and more than 3 millions head of cattle were supplied to them by Government. The Soviet Government have prepared a Five Year Plan for 1946-50, providing for a very big increase in the supply of food-stuffs and of raw-materials.

F. A. O.

The Hot Springs Conference on food and agriculture recommended in 1945 that every country should promote a healthy and efficient agriculture capable of producing that part of the nation's food which is required for home consumption at the lowest price, consistent with the provision of adequate remuneration and decent living conditions for farmers and workers with reasonable return on capital invested. Most of the countries have attempted to improve their agricultural systems and by means of mechanisation they have improved their agricultural production. But the conditions in India are otherwise. Even in the very first years of India's freedom, the food and agricultural problems have become very much complicated and the partition of the country added on some more troubles.

India's Problem

The most important problem which confronted the Indian Union is how to increase the food-stuffs and other main agricultural commodities. It is not capable of easy solution as the attention of the Government is diverted to other more urgent matters such as refugee and defence. The deficit had unavoidably to be met by increasingly heavy imports from abroad, amounting to nearly Rs. 100 Crores in 1946–47.

The Government of India have set up the food grains policy Committee in September 1947 and it has recommended a target of 10 million tons for increased food production of which 4 millions from multi-purpose irrigation and electricity projects, 3 million tons from new lands to be reclaimed by Government and the remaining 3 million tons from such measures as mechanisation, distribution of improved seeds and manures.

of cow manure, bonemeal and superphosphate 5 to 10 seers per fruit bearing tree according to its size. All these three should be mixed in the proportion of 3:2:1 respectively. The mixture should be applied after wintering the plants. Copious watering should then be followed.

Aftercare :—Young plants are susceptible to frost. Take necessary precautions to protect them from it.

Prune the plants in the earlier stage of growth to give the standard form. Later on prunning is not necessary. The plucking of fruits in bunches with leaves and twigs about a foot long completes the prunning operation also.

The fruits as they mature on trees are attacked by birds, squirrels etc. Keep strict watch over these or they cause considerable damage.

The trees begin to bear in 5 to 6 years and continue for 30 to 40 years. They can not be grown on elevations higher than 3000' to 3500'.

Pests and diseases—Leaf curl diseases caused by a whitish mite is the one disease causing great damage. The disease is more common on the young vigorous growing plants. This can be checked by cutting down all affected branches and burning them. Collecting and burning of all fallen leaves after the crop is harvested and spraying the trees with crude oil-emulsion in the cold weather are effective control measures. Putting a coal-tarring or tying cloth band soaked in crude oil emulsion on the stem serves a precautionary measure against the disease.

12. LOQUAT (Erobotrya Japonica)

This is a tree from the Far East where it is popularly cultivated. Both the Chinese and the Japanese are the masters in the art of its cultivation. The tree is ornamental with sweet scented flowers and grows to about 12 ft. high. It is evergreen but hardy and can tolerate extremes of temperature. It is also not partial to any type of soil and can be grown on a variety of soils though good results are obtained on light sandy loams. Good drainage is essential.

The tree is propagated by seeds, layering, grafting and shield budding. Grafting gives better results. Plants grown from seeds are not reliable. The seedlings are best used as stocks.

Planting should be done 18 to 25 ft. apart. Irrigate according to necessity. Manure every year during September-October. Give profuse irrigation when the fruits are swelling.

The plant does not require much prunning and is noted to develop a natural balanced form. The Japanese, however, head back half the growth of the current season in autumn. This is done with a view to get the new growth on which fruits are borne in the winter. Due to this treatment the number of fruits borne is less but their quality and the size is decidedly improved.

The tree is grown in Assam, U.P. and in Gujrat, but on the whole it has not been a good success in India.

13. MULBERRY, SAHTOOT (Morus indica)

The plant is widely grown to raise the silk worms on its leaves. The variety grown for this purpose is the small fruit type commonly known as *toot*. A few plants of the variety giving bigger and better quality fruits may be grown. The tree can be grown as a hedge.

There are two types of trees one having white fruits which may be long or oval in shape and the other having black coloured fruits.

Soil—The plant is very hardy and can be grown in any type of soil without even much care.

Propagation—Plants are raised by cuttings during the rainy season or in October-November. Cuttings should be raised in a nursery; planting each cutting at six inches apart. Cuttings planted in the autumn should be transplanted to another nursery at one foot apart during the beginning of the rainy season. Plants are then finally transplanted to their permanent places when they are about one year old.

Pruinning—The fruits are borne on short spurs along the main branches and on short sturdy growth of previous year hence prunning should be so done that these portions are retained to fruit.

Economics of Mechanisation of Agriculture

By : D. KRISHNA IYENGAR

THE world is short of food to-day and a number of countries are either suffering or fearing famine conditions. Under such a condition, the countries particularly agricultural in nature and set up must arrange their economy properly, particularly their agricultural activity and rectify man's misuse or bad use of soils. They must realise that their agricultural systems have greater capacities for producing foodstuffs and raw materials than ever before. Present difficulties and shortage have arisen from many sources.

Causes for shortage

The ravages of war in agricultural systems and in agricultural populations and capital and the effects of the terrible war on transport and inter-national transfer of supplies are the important causes. The present shortage is bound to accentuate the differences in respect of agricultural progress and security of food-supplies between industrially developed countries which would get their supply of food-stuffs and raw materials easily and the countries like China and India which are suffering from shortage inspite of their vast resources. The conditions in these countries only illustrate in extreme form the well known facts that agriculture and industrial progress have been very unevenly distributed and that consequently it is possible to find modern and efficient systems to produce more. The chief requirement for a full flow of food-stuffs will be the revival of industrial systems and the offer of industrial products to agricultural uses and consumers. More than seventy percent of the cultivators in India are illiterate and live in indigence and their life is a perpetual struggle to eke out a living from an uneconomic plot of land. The man-land ratio is very high and the number of people supported by land has been increasing. The Famine Commission observed that, "The numbers who have no other employment than agriculture are greatly in excess of what is really required for the thorough cultivation of land."

Efficiency of Agriculture

The best and the most simple evidence of the rise of efficiency of agriculture is the reduction of the proportion of occupied persons required to produce food-stuffs for the whole consuming population. This condition of raising efficiency is a *Sine Quo Non*,

large landed proprietors on the one hand, and a class of agricultural labourers on the other. Labour problem has become very acute there owing to the migration due to unhealthiness which has resulted in the decrease of the cropped area. Under these circumstances, there is greater scope for mechanisation of agriculture in Malnad than in Midan.

With nearly 8 million acres of land under occupancy, Mysore does not possess even ten tractors. What a poor specimen of mechanisation of agriculture? Some of the Malnad land-owners are capable of purchasing them but they have not done so far. Even in regard to power lift irrigation, there is ample scope for improvement. Inspite of the availability of electric power in many parts of the State, land owners have not come forward to avail themselves of the opportunity. As the resources of many agriculturists do not permit of their sinking large bore-wells or installing electric pumps with their own money or borrowed capital, Government of Mysore may consider the desirability of following the example of the United Provinces where such water is raised at Government cost and sold to the agriculturists at a fixed rate per 1,000 gallons.

If agriculture were to be improved in Mysore, it should be mechanised and the depopulation of Malnad should be arrested. The indigenous population should be protected from Malaria and other diseases, and their woefully low standard of life in food, clothing and shelter have to be improved. Malnad is a treasure-house of natural resources capable of yielding much higher income than at present, and the Government cannot afford to neglect either the region or its people. By proper immigration from Midan to Malnad, not only the excess population on land in Midan would be relieved but Malnad can be made capable of supplying both food-stuffs and raw materials, through the help of mechanisation.

Mysore is a land of villages, but unfortunately there is all-round deterioration in them. The hereditary village officers have lost their influence. There is no leadership. The time-honoured custom of communal work disappeared. Factions are rife. Indiscipline is increasing. Eagerness to repudiate obligations is growing. The village panchayats have not yet adjusted themselves to the changed condition. Maintenance of tanks has been completely neglected. The civic sense and responsibility to the neighbour have been completely forgotten. To crown all these, the urban areas are receiving greater attention than the rural. Laziness, unemployment and under-employment are on the increase. Illiteracy and discontent is reigning.

The most important remedy for all these ills is mechanisation of agriculture and decentralisation of Industries. Electric power is abundant in Mysore and available in all parts of the State. By introducing a system of development of cottage industries and by using power on an increasing scale, the excess of population on land may be drawn. By this mass production quality of articles produced and standardisation could be maintained and the earnings of the families in such industries increased. By mechanisation, production of food-stuffs and raw-materials could be improved. Thus the future progress of India as also of Mysore depends upon mechanisation of agriculture on the one hand and a form of decentralised factories on the other.

'Sarvodaya' through Multi-purpose Cooperative Societies

By: K.G. MASHRUWALA

Writing editorially in 'Harijan' of the 17th of October, Shri Mashruwala pleads the cause of rehabilitation of 'Village Economy' through Multi-purpose Cooperative Societies in rural areas. This, he advocates, will control Village Economy, resolve the present conflict between the landlord and the tenant and will bring about equitable distribution of national wealth to the village as a whole. With the development of Cooperative System, the villagers will find large-scale farming more advantageous to themselves and will naturally take to it. This will also breed in them cooperative and comprehensive outlook which is an invaluable asset for the working of enlightened democracy. —Editor.

WE must think of life as a whole and in all its varied aspects. Then there can be no water-tight divisions and consequent clash of interests between agriculture and other industries or occupations. It should be possible for the worker of one occupation to take part in another occupation or have a share in the earnings of other occupations. A development on these lines should be aimed at.

The lack of entirety of outlook is the reason for the various kinds of injustices resulting from the existence of one person as the owner and another as the actual cultivator of land, standing in the relation of landlord and tenant, or owner and labourer or serf.

The landlord's share in what the tenant might produce with his labour has been long assumed to be legitimate; but the tenant gets no portion out of what the landlord might earn through other occupations, which he is enabled to pursue owing to the tenant relieving him from the labour on land.

It is sought to remove this injustice by abolishing the absentee landlord. He is asked either to become a pure agriculturist himself, cultivating the land, or to cease to have any interest in that land.

This does not seem to be the right direction of remedying the ill.

For the proper uplift of the Indian village it is important that a villager should not be merely an agriculturist, a herdsman or a trader. As a rule none of these occupations provides continuous engagement and full work during all the days of the year. Even if every one of these could be so developed as to provide full employment to persons engaged in it, it is necessary that they should also pursue a handicraft along with their main occupation. A mere agriculturist does not often develop fully on the intellectual plane. A mere shop-keeper or a mere artisan tends towards physical weakness and moral cowardice.

Village needs led to the rise of the artisan class; where they could not be created locally, they were invited from other places. The same needs brought the mere agriculturist under the control of the trader. A few persons with greater intelligence or cunning than others of the agriculturist class also took to that profession. They did not require to abandon their lands. They were cultivated first through labourers and then through lessees.

Thus came about a division of labour. But in the division of earnings, the merchant claimed a share both in the produce of the land and the labour of the artisan, while he

Cultivation by tractors is not entirely a new innovation in India, but a great impetus was given to it by the Central Government in May 1947. 200 heavy tractors and bull-dozers were purchased from U. S. Army equipment and they were used for land reclamation. About 45000 acres in U. P. and C.P. were brought under cultivation. It was hoped, large acres of jungle lands in certain provinces and States and similar vast areas infested by the weed known as 'Kans' in Central India and 'Hariali' in Bombay and Madras might easily be brought under cultivation after deep ploughing by heavy tractors.

Low Production in Agriculture

The low productivity of Indian Agriculture is proverbial and this is due to the failure of applying modern scientific method to it. During the eighteenth and Nineteenth Centuries, there was economic transformation in European Countries, and they have all adopted a new system of crop rotation, better method of sowing and reaping, the use of chemical manures and general application of new scientific knowledge through mechanical development to all the related aspects of the economy. New economic institutions were developed and the entire way of life was altered; and in this great effort the State played a prominent part.

Indian economists after Gokhale and Ranade, were alive to the situation here and pointed out the absurdity of following an alien agrarian policy in India. The various Famine Commissions and Committees have observed the seriousness of the agrarian problem and almost nothing was done either to organise agriculture on a new scientific basis through mechanical development, or to foster industries so as to relieve the pressure of population on land. The recommendation of the Royal Commission on Agriculture covered almost every aspect of agriculture and rural life, but left out land reforms, irrigation cess, and mechanical development. The popular ministries in 1937 tried to take up the subject, but the war intervened, and they could not do anything. The Government of India appointed an Agricultural Policy Committee, which did not meet at all.

Agriculture in India has become a deficit economy. The land system here contains all the evils of a feudal system. The pressure on the land is too great. Holdings are getting smaller and scattered. Cooperation has almost failed to provide the required agricultural finance. Facilities for proper grading or standardisation of agricultural produce are very scanty. Land taxation is iniquitious and the suitable organisations that existed in rural parts have disappeared. The agricultural Research Institute at Pusa, The Imperial Council of Agricultural Research, The Central Cotton and Jute Committee, The Agricultural Credit Department of the Reserve Bank, have no doubt done some research work, but they have not helped any large scale mechanical development in agriculture to increase the production. Inspite of the efforts of the Servants of India Society, the All India Spinners Association, the All India Village Industries Association. The Harijan Sevak Sangha, and the Kisan Sabha, research and new knowledge have not yet fertilised Indian agriculture and mechanisation has not yet penetrated into the actual farms. As a result of a peculiar system of industrialisation in India, the old balance between agriculture and industry is destroyed. The villagers lost their subsidiary occupation. There is more and more ruralisation, more and more dependence on agriculture, more and more pressure on land. People in rural parts are sinking into greater poverty, which seem beyond repair, due to their very low income.

Scope of Mechanical Development

Modern science has contributed to man's control over nature through developments in engineering and machinery. Engineering

gives control over technique through mechanical development in the field of production, transport, housing and cultivation. Mechanical engineering has brought about improvements in tools, implements and machinery. The machine age has elevated rural life by providing new agricultural implements and this has also made large-scale farming most successful in U.S.A. and U.S.S.R. In India there is immense scope for improved implements and tools which can be utilised with advantage by farmers, even on the small holdings. Indian peasants and artisans require cheap, light and simple machinery.

It is said owing to general poverty of the villages, any good scheme of rural electrification and its use on the land on a western scale would be difficult and impossible in India. Besides, India being a country of small farms and scattered holdings has not much scope of improvement in this direction. But this fact should not prevent any possibility of extending the use of electricity to the villages wherever possible. France is a country of small farms with 95 per cent farm families. Japan and Germany with 90 per cent, Denmark with 85 per cent, Holland with 100 per cent, have all provided Central Electric power Station Services. Such being the case, India has a great future and greater scope for development in rural electrification. It would be wrong to say that our villager does not realise the use and value of cheap electricity both for agriculture and industry. Japan has created such immense facilities by installing small factories in rural areas. Such cheap electric power is one of the first needs of India and it must have precedence over all other mechanical development.

Mysore

What is true of India will certainly apply to Mysore. The economic conditions of the rural people and agricultural production has not been improved in Mysore. An enquiry into the economic conditions of rural families in about 258 villages selected all over the State reveals that in many places the yield from land is very low and the income of the ryots is appallingly meagre. Inspite of the State Agricultural Department, having demonstrated the advantages of better seeds, better manure, and better method of cultivation, those methods of cultivation have not been taken up by ryots to effectively increase their production. There is a clear deficit to the value of more than a crore of rupees under food crops and another crore of rupees under cotton and Indian piece goods. The problems of Mysore agriculture are how to increase the production of paddy, grain and cotton to meet the country's requirements and how to increase the production of exportable crops to compensate for the large imports. Therefore it should turn its attention towards mechanisation of agriculture.

The total area under cultivation is going down and this is an indication to show that agricultural position is deteriorating. The resources of many agriculturists do not permit of their sinking large wells, installing electric pumps or use up-to-date machinery. Geographically, Mysore has been divided into two parts—Midan and Malnad. Midan has much greater area than the Malnad. 46 per cent of the total area under paddy, 59 per cent under areca nut, 15 per cent under sugar cane, the entire area under coffee, tea, cardamom and pepper, are in Malnad. It is the forest of Malnad that produces the most valuable timber and sandlewood. Though the area comprised in Malnad is small, yet it contributes very largely to the resources of the State. It is unfortunate that this area has been neglected and the cropped irrigated area is declining from decade to decade.

Agriculture in Malnad requires large capital and labour and it has given rise to

admitted nobody's share in the earnings of his trade. Similarly, the landlord claimed a share in the yield produced by the sweat of the labourer, and also exploited the skill of the artisan by giving him no more than just sufficient for bare existence, while he himself gave no share to the latter from his earnings from other lands or occupations. Thus the only person who worked hardest and got least was the landless labourer and the artisan.

The reforms now attempted aim at eliminating the landlord and the "middleman," (that is the shopkeeper or the agent), making the artisan and the farm-labourer 'free' classes and enabling them to take a due share of the fruits of their labour.

Since none dares to stop large-scale industries, the industrialist retains a place of honour in the national economy.

The joint Hindu family system was based on blood relationship. There was a time when a family consisted of as many as 200 to 250 members. This made it possible to divide the work of cultivating land, tending the herds, manufacturing various articles, marketing produce, etc., amongst its different members. All belonged to one family and consequently each one shared in the produce of all. But that system has now disappeared and it is not possible to revive it in the same form. But the principle of common share in the earnings of all which underlies that system is a valuable one. It can now be taken advantage of only through multi-purpose co-operative societies, and all laws and reforms should be devised with the object of promoting such societies.

The Tenancy Act also should pursue the same object. The so-called landlord, the agriculturist, the tenant, the farm-labourer, the village artisan, the shop-keeper and the emigrant, who goes abroad for a short while to earn, should be all so knitted together in a common society that everyone shared in the earnings of all others and none remained unemployed. Everyone is, of course, to get a living wage. People should be guided and taught to a social and economic life based on such multi-purpose co-operative basis.

If the landlord is prepared to share all his other income with the tenant and the labourer, there could be no harm even if he retained the ownership of the land.

There would be no objection to a trader investing his savings in the land and taking a share in its produce by getting it cultivated by labourers or tenants if he is equally prepared to share his other income with his tenants and labourers.

An enterprising young man in a joint Hindu family goes abroad and makes money. He has to share it with other members of the family, even as he himself gets a share in the earnings made at home during his absence. Why not extend the bounds of family, and include the tenant and the labourer, indeed, the whole village, in it? Then there should be no cause for jealousy. Rather, he would receive help and encouragement for his enterprises abroad. This is possible on the co-operative principle. When this happens, the terms 'absentee-landlord,' 'unearned increment,' and 'exploitation' will fall out of use.

It is certainly more advantageous to cultivate larger farms of, say, 100 to 200 acres, than those of 50 acres and similarly a bigger herd is more productive of wealth than a small one, provided always that this is done under the co-operative system.

If the new Tenancy Act is not favourable to the promotion of such co-operative

societies, the defect should certainly be remedied in a suitable manner. The law must welcome and encourage erstwhile landlords to take greater interest in their land, to go back to their villages and take to personal cultivation, improvement of agriculture and also promotion of industries in their villages, in such a way that the tenant, the artisan and the labourer all share together the joint earnings,—all occupations and all earnings being regarded as joint.

The agriculturist is very much attached to his land and he will not part with it easily. He will do his best to circumvent the law.It would, therefore, be much better for all if he could be induced to go the way of justice and *sarvodaya*.

It is no doubt much to be desired that there should be no delay in justice; but the tendency to take away matters from the jurisdiction of civil courts is not a healthy one. The purpose behind the demand to separate the Judiciary from the Executive is defeated by instituting all sorts of special Tribunals independent of the Judiciary. The tendency to take away the power of the civil courts to see to it that the law is properly interpreted and administered, and evidence is carefully weighed and justice is done is bound to lower the moral standard of governments.

The commutation of produce into a money-equivalent is apparently convenient. But in reality it is quite a wrong procedure. What deserves to be done is to fix the quantity of the landlord's share for a number of years, as say, 5maunds or 10 maunds, instead of an annually variable one-fourth or one-third quantity. During bad years, the quantity should be reduced or remitted in the-same way as rent is done under Land Revenue Law.

PAUCITY AMIDST PLENTY

By K. M. DESAI

THIS country which had once built up its vast export trade with distant lands is to-day passing through an unprecedented crisis to feed and clothe its own population. And, it is all the more distressing when we realise the fact that the vast potential and productive resources of the country lie unexplored and unutilised.

India is the biggest producer of cotton, it is the world's largest sugarcane grower, it has half of the world area under rice, it produces 52% of world's groundnut, it is the third largest wheat producer and it has one third cattle population of the world. In the industrial field it has the largest resources of high grade iron ore in the world, it produces one third of the world's total output of manganese and three fourth of world supply of mica and quite a lot of coal etc. And still India is a poor country inhabitated by poor people on the border line of starvation. Its annual per capita income is Rs. 65 as against 980 in U.K., 1038 in Canada and 1406 in U.S.A. It produces Rs. 56 worth of crop per acre as against Rs. 225 in U.K. Its soil has stabilized on the lowest fertility level, further fall in fertility not being possible. Its cow on an average gives 1½ lb. milk per day as against 5 lbs. in other countries. Its 61% of population are poorly or very badly nourished. Its death rate of 21 per hundred is possibly the largest and the expectation of life of 27 years the lowest among the civilized countries of the world. The literacy is as low as 12%.

That is our lot and for that unenviable lot we had till yesterday reasons to blame the foreign rule. Today, when we are completely free to mould our own future we feel despaired of our increasing population, paucity of land for cultivation, want of capital and what not. We, however, forget that in the period of 60 years between 1870 to 1931 the population of India has increased by 31% as against 77 in England, 113 in Japan, 115 in Russia and 125 in U.S.A. The population per hectare (2½ acres) of tilled land (persons) is 2.9 in India, 1.9 in France, 1.1 in U.S.A. and 0.7 in U.S.S.R.

Why then despondency and fatalism? The reason has to be sought in our defective psychology and wrong angle of vision which have not changed even though we have attained political freedom. We have failed to recognize that economic freedom is an essential counterpart of political freedom. We are pleased to call ourselves a politically free nation. But, do we feel the pinch of humiliation we are subjected to, everytime we go about begging before foreign nations to supply wherewithal to feed and clothe our people. This dependence on foreign supply to meet vital needs of life of our people is in no way less humiliating than dependence on foreigners to guide our political destiny.

Scientists tell us that India is utilizing only 17.66% of its available town and village refuge as manure and if this percentage could be raised to 50, India can add to its food production by 10 million tons which would more than cover the present food deficit besides leaving something surplus to export. There is hardly 10% of the total cropped area under improved varieties, less than 5% improved implements or efficient machinery and 15% of the area under irrigation. Specialists further warn us that we are losing annually 10 to 15% of the crops by way of damage through crop pests and diseases and several crores worth of food through bad storage, insects and rats. We are losing 1 to 10% of our top soil by soil erosion every year. Then there are innumerable land fragments and defective land tenure systems. Capital is woefully shy in the sphere of improvement of agriculture. Agriculture, the backbone of the nation, has not been recognized as an industry but as a means of livelihood for the largest section of the population who are poor, illiterate and conservative.

The moneyed class and the intelligentsia have found better returns and immediate profits to their investments in other industries and have, therefore, naturally disliked to invest their capital or intelligence in the development of Agriculture. Other industries are being nourished at the cost of agriculture by drawing efficient labour and offering them high wages and other securities. The Government and other parties representing the industrial labour too, show a great deal of concern if there is a strike by the industrial labour and see it pacified by satisfying their due demands. They are given increased wages and bonuses which are anyday more remunerative than what is being earned by the tiller of the soil by following agricultural occupation. This economic disparity between agricultural and industrial worker has got to be removed if we wish to put agricultural economy on a sound basis. That the Indian Government spends only one anna per person as against Rs. 80/- per person spent by the Federal Government in U.S.A. on agricultural development and that out of every 100 rupees spent on administration only 12 annas go to the share of agriculture in India proves, if proof is needed, what importance we attach to the main industry of the country. Is it any wonder then that agriculture is admittedly

a deficit industry and does not produce enough food to feed the country's population.

The foremost need of the hour is to step up production, check inflation and raise the economic standard of the teeming millions. It is pure moonshine to think of building up political, cultural and moral foundations of the country with large masses of people insufficiently nourished, inadequately clad and ill-housed. The problem of India's sound economy and prosperity in all spheres of life rests upon increased agricultural and industrial production. The Union Government should find several times more money to be invested and vastly inereased number of manpower to be employed on agricultural development which alone would solve the problem of food and clothing facing the country at the moment.

IMPROVEMENT OF DAIRY INDUSTRY

By ZAL R. KOTHAWALA

Shri Zal R. Kothavala, Dairy Development Adviser to the Government of India, has prepared a Five Year Plan for increasing Milk production in the country, from which we take the following extracts, which, we hope, will be read with profit and interest by those interested in the Development of Dairy Industry in our country.—*Editor.*

It needs hardly be stressed that dairying is an industry of first rate national importance, as milk is one of the most essential foods for human welfare. The annual cash value of milk and milk products may be estimated at the prevailing prices at over Rs.700 crores. As has already been stated, the annual production of milk in the provinces is only about 3,200 lakh mds. varying from about 26 lakh mds. in Assam to about 1,126 lakh mds. in the United Provinces. The average per capita consumption of milk is below 5 ozs. in all provinces except in the United Provinces and East Punjab where it is 7.4 ozs. and 16.1 ozs. respectively. To provide the desirable minimum nutritional quantum of one lb. (8 ozs. fluid plus 8 ozs. in the form of milk products), per person per day and also for the rearing of calves, the total production of milk will have to be increased nearly 3½ fold. The targets to be aimed at by the different provinces will, however, vary according to their present production. For example, to become self-sufficient United Provinces should double its production whereas Orissa has to increase it five times. While it may be possible for U.P. and also perhaps Bihar to attain their targets in course of time, it appears rather difficult for the other provinces to become self-sufficient within a reasonable period of time. To achieve the targets of production the quality of cattle will have to be improved first. The feeding of cattle will also have to be improved. The annual production of concentrates is only about 2.25 million tons and that of roughage only about 140 million tons. To provide the required nutrition to the cattle, the supply of concentrates has to be increased by about 20 times and that of green fodder and dry fodder about 6 and 3 times and that of production and marketing of milk and milk products will also have to be organised on economic lines to assure a ready market and profitable price to the producers and safeguard the interests of the consumers. Several other matters concerned with the improvement of dairying will also have to be attended to. The more important points which are deserving of consideration in bringing about an improvement in dairying are briefly dealt with below:-

(1) *Quality of cattle* - Due to the fact that good bulls available at present are very few, their use is confined to limited

areas instead of their being exploited to the fullest extent possible. The number of milch animals which these bulls are able to cover annually is only 50–60 times their number and thus the over all improvement brought about by them is more or less insignificant. It would be desirable to spread the superior milk transmission qualities of these bulls over wider areas in the country, by adopting the practice of artificial insemination to bring about quicker improvement. It is considered essential that the improvement of cattle in the plains should be brought about through the progressive propogation of superior Indian blood, but it is doubtful if a similar policy for all the hilly regions will be feasible for increasing milk production. The indigenous cattle do not thrive well in some of the higher hilly regions and it would, therefore, be more economical to infuse exotic blood into them through the practice of artificial insemination, to obtain high milk yielding progeny. The number of good bulls available at present will not effectively help to improve the entire cattle population. To do this, a very large number of bulls will have to be produced each year. As it is essential that such bulls should be of approved quality, their poduction will have to be confined to special centres such as Milk-cum-Bull Production Farms, where facilities for proper selection, rearing and testing under controlled conditions of milk production would be available. Besides the improvement in the milking quality of cattle by better breeding, it would be necessary to dislodge cattle from urban areas and colonise them in surrounding areas or ruro-urban zones, as urban conditions are not conducive to economic milk production. Concentration camps will have to be established for the maintenance of non-productive stock. It would also be necessary to pay attention to other points which aid the improvement in the quality of cattle, such as regulating services and calvings to minimise seasonal fluctuations in milk production, weaning of calves and rearing only those considered suitable housing cattle under sanitary conditions, providing sanitary milking sheds and milking, methodically at regular intervals, proper treatment etc.

(ii) *Supply of concentrates, salt, succulent fodders and water:*—

The present production of concentrates is only about 5% of the nutritional requirements of cattle. It is not possible to increase the production of concentrates unless new areas are brought under cultivation or the present cropping system is radically modified, but it should not be difficult to organise their procurement, distribution and utilisation on economic lines. The use of fish meal, molasses, ghee residue etc. may be encouraged to help overcome the shortage. The feeding of " balanced " rations would help to economise the use of concentrates and produce better results in milk production. To bring this about effectively the manufacture of " concentrates-cubes " may be encouraged. Salt and minerals should be provided regularly to cattle as these are very necessary for maintaining the cattle in good health and increasing their milk production. Supplies to deficit areas from surplus areas could be organised through a Basic Plan mutually agreed to by Provinces. Imports of cattle-feeds may also be made from abroad to relieve temporary shortages, if possible. When prices of concentrates are beyond the purchasing power of milk producers, supplies, especially to institutions like Co-operative Milk Unions and dairy farms, should be organised and subsidised. The production of succulent fodders and legumes should be encouraged to the maximum possible extent by providing facilities of irrigation, seeds, manures and technical guidance to the cultivator-producers.

Facilities for the procurement and distribution of green and dry fodders to areas where production is not possible, should be provided and the supplies should be subsidised wherever prices are high. The production of silage should also be encouraged by providing silos and chaffing equipment. The grazing areas should be improved and properly looked after and " Rotational grazing " should be encouraged. The growing of fodder trees, production of hay in forest areas and economic utilisation of dry fodders by chaffing should be encouraged. An adequate and regular supply of clean and sweet water which is very necessary for the health of cattle and milk production should be provided. Wherever necessary, wells should be renovated, new wells sunk, water raising devices provided and water storage tanks and troughs constructed.

(iii) *Organised production and handling of milk and milk products and improvement of quality:*—A large proportion of milk and milk products intended for urban markets is produced in rural areas. The only way to increase production is, therefore, to provide incentive to the rural producers, in the form of an assured market and profitable price for their labours. This can be achieved by organising the producers on co-operative lines and enabling them to contact the consumers directly or through a limited number of approved distributors. The required facilities will, therefore, have to be provided to co-operative Unions which may be set up for the production and handling of milk and milk products. The provision of milking sheds and milk rooms, pure and safe water, clean milking outfits and other equipment, bonus for clean and good quality milk and milk products etc. will help to improve methods of production and handling. Facilities of storage and transport under refrigerated condition and reduction in railway freight will increase the flow of milk and milk products from rural to urban areas. Arrangements for the supply of proper plant and equipment will also have to be made. Milk control measures and legal control of milk products will have to be made more stringent. Manufacture of milk products and by-products which are harmful to the development of the milk industry will have to be restricted. Producers and consumers prices will have to be controlled to safeguard the interests of both. Production of milk in urban areas will have to be displaced gradually by stricter licensing and providing facilities for the colonisation of of dislodged cattle in the surrounding rural areas. Milk production on dairy farms and small holder farms will have to be encouraged to offset fluctuations in rural supplies and to augment the supply of hygienic quality milk to the vulnerable groups of urban population. Private dairies and manfacturing centres may be encouraged, but those which do not observe the laws and regulations which may be enforced for development of dairying, should be dealt with severely.

(iv) *Training of dairy "technicians" and Research:*—A large number of technicians are needed to meet the requirements of the dairy industry. Besides specialists in different branches, such as dairy farming, cooperative dairying, dairy products manufacture, farm and dairy engineering, quality control, dairy refrigeration etc., a very large number of practical workers for field organisation are required. The requirements of specialists and field workers will increase from year to year as dairy development work expands. Facilities will, therefore, have to be provided for training such men at various centres in different provinces. A few men will also have to be trained abroad to fill positions of responsibility. On the research side the facilities now provided at the I.D.R.I. will have to be considerably increased and substations including field

extension services will have to be set up. Centres for research will also have to be provided by the provinces. It is necessary to point out that research must not end with fundamental investigations in laboratories. The results of fundamental work must be tried out under field conditions and translated into practical dairying. This work should be carried out systematically within reasonable time, giving the highest priority to problems of immediate developmental value and importance. Results of researches which were carried out for the direct benefit of the dairy trade should be published to simple style and in the common languages of the provinces so that they are translated into practice by those for whom they were primarily, intended.

(v) ***Production of suitable equipment:*** The development of milk and milk products industry largely depends on the large scale use of suitable equipment. At present almost all the equipment required is imported from abroad, except for a few articles which are manufactured in India. On the whole the equipment in use at present is faulty in most cases, and losses in handling and storage of milk and milk products are in consequence considerable. The production of indigenous articles is small and their quality below the desired standards of durability and hygienic requirements due to serious handicaps under which the manufacturers have been working, such as difficulties in procuring manufacturing machinery, raw materials and other essentials, and inability to compete with imported articles. The need for encouraging internal production is obvious. Facilities such as supply of raw materials, importing manufacturing machinery from abroad, acquisition of land, construction of buildings, supply of electric power, etc., should be provided to those who like to take up manufacture. Technical institutes and workshops in the provinces should be properly staffed and equipped for designing, constructing and testing dairy equipment and giving technical guidance to private manufacturers. Imports of only such items as cannot satisfactorily be made in India should be permitted. Prices of imported articles should be controlled. Fair price depots should be set up and supplies to rural producers may be subsidised.

GLEANING

Recruitment of Best Human Material for Public Service

WITH the establishment of National Government, the question of efficient public administration naturally assumes first rate importance. The quality of administration varily depends on the quality and potential capacity of the personnel engaged in running the administrative machinery. The old machinery suited to British pattern of administration and the tests used by them for the selection of candidates for public services will not, in the very nature of things, suit the new administrative set up which is required to perform the responsibilities of national reconstruction.

To the tasks awaiting the national administration, mere intelligence test of the candidate has not much meaning. Public Services of the future should be manned by young men and women with personality and drive. Very rightly, Mr. Shrivastava emphasises the necessity of all-round competence and psychological aptitude of the candidate for the type of service he is recruited for.

The necessity of psychological test of the candidate to be selected for Public Service, stressed by Mr. Shrivastava in the course of his article, which we reproduce from the 'Bombay Chronicle' is absolute and important. Let us hope, those who are charged with responsibility of selecting personnel for Public Services will give first preference to psychological test of candidates in the interest of increasing efficiency and quality of Public Administration.

"It is a truism to say that the quality of the Public Service is the quality of its officers. This is so in every walk of a Nation's public life, in war or peace. Yet a reiteration of it is necessary, because it is fundamental to ensuring efficiency and economy of public administration, more so in a Nation which is in the making. An Officer is a leader who is made, rather than born into a class or caste. And good leaders are essential for manning the public services—whether defence or education or industry and commerce or agriculture, indeed services which touch on every aspect of the social, economic and cultural life of the citizen. Men and women of personality, character, determination and intelligence, alone can control and regulate the immensely, complex and mobile machinery of public administration.

"The system of public services in India has been built up during the century-old British rule upon a foundation and from the material which can be said to be A1 intelligence and perhaps in industry too. Possession of a University Degree and capacity to win a top rank in the competitive examination have always decided to those individuals with A1 intelligence and industry. But the many subtle and intangible qualities of character essential to good leadership are not and can never be assessed to an appreciable degree of objectivity and accuracy by any system of formal competitive examination. Indeed, these may not even reveal themselves in an ordinary traditional type of interview. Thus if some of all of our officer personnel have shown to any degree the possession of such qualities as drive, perseverance, deliberateness, trustworthiness, unselfishness, socialibility, warm-heartedness and so on, the method of selection by the formal competitive examination or the possession of a University Degree alone can seldom be held to be responsible for their just assessment.

"Nor has the basic consideration of public service recruitment and sclection ever been influenced in the past and even to-day by consideration of personality needs of the service. Even on the intellectual side the service needs such as planning, organising and administering have been met with varying degrees of success. Notwithstanding the fact that our educational system is par excellence intellectually oriented or, to put it more correctly, unduly weighted for the acquisition of academic and manual skills the competency of the recruit to the public services is assumed, rather than ascertained, in terms of progressively developing and stable qualities of the mind.

Personality And Drive

"Thus we see that the public services in the period of the British rule have been dominated, perhaps deliberately, by the sole factor of intellectual competency to the neglect of all round competency, i. e. emotional and social as much as intellectual. The result inevitably has been the development of an attitude of aloofness and impersonality by our administrative men. This indeed is in consonance with the fundamental characteristic of British rule in this country.

"With the ending of British rule and the advent of the rule of the representatives of the peoples themselves both in the Provinces

and in the Centre the service needs of the Nation have per force undergone a metamorphosis. The service personnel must now needs become the true servants of the peoples and the latter are the sole judge of their competency and of the efficiency of the public service rendered by them.

"Naturally the people or, more properly their respresentatives in the Centre and in the Provinces are concerned for the first time in the history of the public services in the country in exploring the ways and means of putting the right man in the right place. This is also the concern of the man of science. Whilst the concern of the people is largely humanitarian somewhat general and his representative in the Government can appraise public service in terms exclusively of efficiency, adequacy and economy the man of science can but view the entire situation in its proper perspective, i.e. in just appreciation of the needs of the service men and of the peoples whom they serve. Indeed, none but the most unimaginative bureaucrat is ever convinced that academic qualifications or the capacity to obtain a top rank in a formal competitive test go by any means always with leadership OR common sense.

"That being so, we cannot but be sceptical, even in a period of normalcy about the prognostic efficiency of the methods of recruitment and selection of the officer personnel handed down to us by the British rulers. Can it be said then that these methods would carry us through the period of transition we are now in and have they the inherent potentialities to make possible the emergency of a stable and sound and progressive order of government which every one of us is hoping would come about in as short a time as possible.

"A transition period whether in the life of a man or in the life of a community or nation is always beset with many and varied kinds of difficulties. They are 'growing pains' as it were, which make the sufferer impatient and restless and apt to throw him out of gear. Naturally to meet this unusual development characteristic of the transition stage outstanding, or at least well above average qualities of mind and body and spirit would be in demand—qualities which different services lay differing emphasis on. An administrative officer, for instance, has to plan, organise and administer the many activities of the department or office which he officers. In this task he has to master a very wide range of subjects that a modern department entails. He must therefore needs have a very high standard of intelligence industry and application. An executive officer such as a police officer or an engineer likewise has to deal with men and machinery in which capacity his outstanding requirements would be stable, mature and well integrated qualities of character and temperament, indeed his personality should be well above average, if not outstanding.

Need For Right Men

"We therefore need, particularly at this transition stage, individuals of outstanding ability and character to officer our public services. No one who is not A1 in this respect can reasonably hope to withstand the unusual stress and strain which the transition with its attendant all round instability and insecurity has left us in and lead us to positive and purposeful goals.

"Two questions naturally are asked at this point: (1) have we an adequate number of such individuals in the ranks of the University Graduates, and (2) are the present methods of recruitment and selection, namely by a system of general advertisement followed by a competitive examination and interview on the traditional lines capable of spotting such individuals and ensuring their adequate supply for filling the officer ranks?

"The first question can be answered only inferentially, i.e in terms of the educational opportunities available in our Universities for producing A1 men and women, persons with wide culture, outstanding ability and a sound and stable character.

"It was, I am told, the result of the experience of those who were actively associated, as specialists, with the recruitment and selection of officers for the fighting services during the last war that (1) suitable officer material was not available in the country in required number and quality and (2) the system of education at the secondary and collegiate levels was not conducive to stimulating to fruition and to unfolding the qualities of the mind and body and spirit necessary to young men and women fit to assume leadership roles.

Crammers Not Wanted

"As regards the efficiency of the selection of candidates it is well-known that the academic qualifications alone (which the competitive tests assess) are an insufficient guide to a candidate's all round ability and competency, since these tests depend to a large extent on a good memory and intensive study for a short while only. Besides, the essential objective in choosing a method of selection should be to find the best qualities of the candidate and to judge the whole man and not to 'catch' him out. The emphasis from the standpoint of the candidate should be not on 'cramming' which is a most unfortunate characteristic of our educational system but on his ability to make full use of his natural talents and disciplined qualities of character expressive of a life style of self-reliance and energy.

"Having shown in the foregoing paragraphs the inadequacy of the available recruiting material and the inefficiency of the selection method we must now look to the possibility of introducing radical changes in both respects i. e. in the recruiting field and in the selection methods. The system of secondary education is being reorganised so as to make it fully worthwhile to the individual to pursue the secondary school course as an end itself, i. e. serving his personal needs of an education for living and for life. Such an education would also serve the needs of the community and the state for a broadbased liberally educated and sufficiently wide recruiting field from which to choose and prepare the officer personnel. Psychologically the secondary school student under the revised secondary school system will make an ideal individual from the point of view of general trainability. He would be a youth mature in every respect but not yet grown immobile or inflexible, with a dynamism capable of extending many-fold the natural powers and acquired dispositions. In terms of the extent of the field for recruitment and variety of material available for selection the secondary school population is immeasurably larger than the population of University Graduates.

"The actual procedure for selection of potential officer material from the secondary school population should be based on two criteria: (1) the cumulative record of progress of the secondary school pupil through each school year in the secondary stage, supplemented by his record at the secondary school certificate examination and (2) the interview based on tests conducted by a board to be constituted for this purpose. The first criterion should be treated as a preliminary sieve and the second as the final test.

Service Commission To Note

"The board should consist of a senior psychologist with clinical experience, an educationist of wide culture and mature exprience in educational matters and a senior admin-

istrative officer. The actual tests on the results of which the interview by the board would be based should consist of (1) a general cultural background test which will be a check up on the information available from the cumulative record of school progress, (2) a school achievement test in major and minor subjects which the pupil has studied in the school and (3) a personality assessment by means of tests and interview of a clinical nature.

"The young men and women who are selected by this board to become the prospective officers and the entire expense of their further education and training would be borne by the state, should then pass through a course of training which should be in two stages; stage (1) will take the candidate through a four year University course in which they will do an intensive course in public administration and international relations in addition to the usual Degree course and in the IV year they will also acquaint themselves with the practice of general administration. In the second stage which will follow immediately on the completion of stage 1 the candidates will spend a year abroad, in the United States and in some of the advanced countries of the British Commonwealth, observing and studying the methods and routine of public administration in every field of national activity. As pointed out in the beginning these selected students will undertake to serve the state till the age of retirement while the number to be selected will be regulated by the service needs of the state.

"A system of recruitment, selection and training of the prospective officer for the public services, outlined all too briefly in the foregoing paragraphs, might throw doubts and misgivings in some minds regarding (1) the adequacy of the degree of all round maturity of a secondary school student to warrant selection for receiving specialised training in general administration and international relations along with or further to his University education, (2) the possible consequences of an undemocratic nature arising from the rule of the professionals and (3) the possible misuse by the officers of the specialised training received by them at the cost of the Government.

Psychological Issue

"The first is a purely psychological issue and is for psychologists to answer but I hope I will not be far wrong in stating that both physical and mental development reach full maturity by the age of 18 or there-abouts, provided of course the natural powers as well as the nature and variety of the environmental influences have not been below normalcy. Moreover, the age of full adolescence has been shown to be eminently responsive to general trainability, i.e. to profit from instruction of an intensive kind and to understand and solve problems that arise from time to time.

"The second ground for misgivings can have real basis in the ill effects of the rule by professionals on the growth of democratic way of life. The officer who is specially trained for public service in a particular field of activity is oftener than not apt to grow authoritarian. But there are dependable safeguards against such a trend and they are (1) eternal vigilance on the part of the peoples' representatives and (2) rising tempo of democratic spirit in the mass of the people which can be progressively externalised through a planned programme of social education. The possibility of the training being misused can also be met by legal safeguards."

THE RURAL INDIA

Vol. XI, No. 11] DECEMBER, 1948 [Whole No. 118

"Salvation of India lies in Cottages" —*Mahatma Gandhi.*

FACING FACTS

"Facts take their revenge if they are not faced squarely and well", said Sardar Patel, the Deputy Prime Minister of the Government of India in the course of his convocation address to the students of the Allahabad University. Most other convocation addresses delivered by eminent leaders of thought at various Universities during the year have mainly discussed the complicated problems facing the new-born nation and advised the youth and the people in general to rise equal to the grave crisis, the country is passing through.

The central theme of talk in common is the betrayal of the spirit of patriotism, self-sacrifice and selfless service to the nation in the post-freedom era, which characterised the nation's efforts for attaining freedom during long years of its struggle. The mad rush for cashing in the prizes of patriotism and national service rendered in the past without making further investments to the national exchequer is fast leading the country to national bankruptcy and this is what is giving real headache to the national leaders. How the pressing problems of national construction are to find their solution in the midst of widespread irresponsibility, indiscipline, confusion and fast deteriorating standards of public life leading to licentiousness, nepotism, blackmarketing, jobbery and corruption in all ranks makes one shudder to think of our national future. The burden of the convocation addresses of the year is an earnest appeal for moral elevation of the people and a warning of impending national disaster if we do not wake up in time to the realisation of our responsibilities.

Sardar Patel has the reputation of being a 'Steel man' of India, who unlike many others is not given to emotional out-bursts. With his intimate knowledge of the people and the working of administrative machinery of the Government if he draws a distressing picture of the prevailing conditions in the country as we find them expressed in the course of his address, it is time, people should take serious view of what he says and see their way to mend matters before it gets too late. Referring to the demoralisation that has set in the ranks of public men, he observes:—

"We now seem to relish intrigues and scramble for power; our contests are tarnished by a disregard of the healthy rules of the game; we pay but lip sympathy to truth while violence rules our temper and hearts. Our minds and action move in narrow grooves; the wider objectives before us and the larger interests of our country are gradually receding from our vision. There is confusion and disorder in our ranks; that real soldierly discipline and keen sense of public duty are becoming more and more scarce.

"At a time when we should have closed our ranks we are seeking to divide them not on any serious ideological differences but purely on the basis of a fight for leadership. Controversy seems to suit our mettle better than consolidated firmness. More and more production,

better industrial effort, and greater industrial installations are the need of the hour. Instead we are choking production by constant threats, strikes and lock-outs and stifling industrial growth by refusing to avail ourselves of the opportunities of expansion which exist.

"We are sitting tight over hoarded wealth which it is our bounden duty to invest in productive effort in the interests of the State. Not to be outdone, labour is fighting over the distribution of wealth even before creating it. At a time when we need the utmost of saving and husbanding of our resources we are indulging in wasteful expenditure and avoidable luxuries. *Our sense of moral values has visibly declined.* The demoralization of war years has brought corruption and dishonesty which are still thriving. We are lacking even in the elementary duties and obligations of citizenship. Far from trying to vindicate the law we are outraging it in our daily life. Discipline, character and physical fitness are the hallmarks of a healthy nation. Turn your eye inward and see how far we answer these requirements. Take any walk of life—students and teachers, labour, employers, businessmen, civil servants and politicians. Let us ask ourselves if we are all acting as members of a healthy nation. I am sure the answer cannot be a confident affirmative, and we have all ruefully to confess that we failed the nation in its hour of need."

It is a serious charge against every self-respecting citizen of free-India unless he be prepared to disown his patriotism and national self-respect. It is a limit of human ignorance and self-deception to cut the roots of the tree that shelters. In the words of Pandit Jawaharlal Nehru, 'Who lives if India dies,' due to our reckless exhibition of narrow selfishness and ignorance. That is an unpardonable crime for a public man worth his salt.

The wild exhibition of narrow selfishness and debased mentality that has come to the surface in our public life referred to by Sardar Patel in his address is not a new phenomenon or discovery. This was already there lying dormant deep down in the character and sub-consciousness of our people waiting for external stimuli which the coming of political power has provided. Power is known to corrupt even the most temptation-proof characters, what to say of those who never had a chance to stand such a test. It is no wonder therefore, if it intoxicates them and we find them changed and taking to anti-social and unapproved ways of life.

It will be helpful to disabuse our minds of our exaggerated notions of high moral virtues exhibited by our people during years of fight. Gandhiji himself had accepted while he was with us that ours was a non-violence of the weak and not that of the strong. And finding that there was not strict adherence to 'Truth' among the inmates of the Sabarmati Ashram he changed its name from Satyagrah Ashram to Udyogmandir long before 'Dandi March.' In essence, things were not very much different then from what they are today. Only war-mentality which was prepared to welcome all sorts of people and keep them together as necessary 'Cannon fodder' for fight and overlook their lapses due to voluntary nature of recruitment made the stuff more agreeable.

Speaking from personal experience of the Civil Disobedience Campaign of 1930, we are prepared to testify to the fact that exceptions apart the mass of human stuff which constituted the ranks of the fighters then was more or less the same that we have today. Only the Constructive nature of work, heavy responsibilities of public offices and high expectations of the people have made them less-fitted for new jobs. Ours is a country known for its extremes of the best and the worst mixed-up together. We have hardly a rose-plant not surrounded by hundreds of dung-heaps whose bad odour neutralizes the sweet fragrance of the solitary rose. In order that the

entire atmosphere be filled with the fragrance of rose the process of planting of rose and removing of dung-hills should simultaneously continue in our generation and the next without being deterred and discouraged.

Of course, the magnitude of the problems confronting the 'Free India' is simply staggering and our people do not find themselves equal to the new burdens thrown on them. The problems in their complexity frighten us into diffidence due to the poverty of available human stuff. Speaking of immediate problems before the country Sardar Patel averred:—

"We must grow more food if we have to feed our people well; we must manufacture more cloth if we are to clothe them even with the barest necessities. We have to embark on a huge programme of hydro-electrical development—our one hope of raising the standard of living of the masses. To mention but a few of them, we have the projects of Damodar Valley, Hirakund Dam, the Chambal, the Kosi, the Tungabhadra and the Godavari and the multi-purpose scheme of the Narbada and Tapti. We have to exploit the country's hidden wealth—petroleum coal, iron, bauxite and other minerals in which our country is rich but which we have been unable to extract for want of proper attention, adequate trained personnel and technicians and sufficient capital.

"All this would, however, touch merely a fringe of our vast population. Ours is a predominantly agricultural country and we have to deal with a large population of seasonally unemployed labour. For them and for the larger number of unemployed dependents, we must develop and foster an efficient and well knit system of cottage industries on cooperative lines. We have to lay the foundations of a system of national education suited to the temperament, the needs and the genius of our people. We have to build a healthy nation of healthy minds and healthy bodies."

New responsibilities of administration, introduction of democratic form of Government, one party rule and absence of truly efficient and right type of men to hold responsible ministerial jobs and public offices have combined together to create all round inefficiency, lowering down of tone of public administration, confusion and corruption and unwanted atmosphere of frustration in the country.

The root cause of all prevailing evils and widespread public discontent is to be found in the Governments' neglect and disregard of placing right men into right positions. The wisdom of the ages 'Small minds and big empires go ill together' could only be ignored with penalty. And, we are paying heavy penalty in the shape of national discredit by encouraging inefficiency in public administration and growing confusion all round.

Obviously, big and complicated problems of national administration are capable of being solved only by big and truly capable people. Have we satisfied ourselves on that score and placed the very best men available in our country on places of high administrative responsibilities? Or, we have sacrificed efficiency of public administration at the alter of party loyalty? If country's interests should be subordinated to that of a party, the people cannot escape the penalty of suffering and the Government the odium of incompetency and mal-administration. Things are what men make them. With due deference to our national leaders in the Central Cabinet, we are constrained to say that barring few exceptions here and there quality and human factor in administration are being greatly ignored since we have assumed reigns of administration. And this major fact of consciously or unconsciously putting premium on inefficiency in public administration is taking a terrible revenge on us in a thousand and one ways mentioned by Sardar Patel in his address.

If it is sufficiently realised by those who are shaping the destiny of the country in New Delhi that the complicated

problems of administration and national reconstruction could only be handled by the ablest and the most capable administrators and not by anybody and everybody, who is thrown up by a mere accident in a party election, they should set about selecting the best available talent in the country for public administration. In a grave crisis like the present, formation of National Government composed of the best men in the country alone offers the solution. The Government, we hope, will realise the challenge of the situation and face it squarely and well, before it is too late.

NOTES

FOOD MINISTER ON COMPOST MAKING

Presiding over the first meeting of the Central Manure (Compost) Development Committee held at Nagpur, Shri Jairamdas Doulatram, Minister for Food and Agriculture, Government of India made an earnest plea for conserving the country's manurial resources as one of the easiest and the most effective way of doubling the agricultural output of the country. Very correctly, he pleaded the cause of the predominant industry of the people viz. agriculture and how best to feed the hungry soil after the model of China to increase our agricultural production and make the country self-sufficient in its food requirement. Agriculture is the foundation of India's economic activity and unless large measure of increase is obtained in agricultural production, this country has no chance to restore its lost economic equilibrium and establish conditions of economic stability and prosperity for the masses. To this end the Food Minister made significant observations in the course of his address and said :—

"The economic welfare of India, which can only mean of its vast masses, has no meaning unless the standard of living of these masses is very much higher than it is today. This must be the sole objective of our economic activity. This higher standard of living is not possible unless the purchasing power of the masses has increased. The purchasing power of the broad masses, spread out far into the countryside, cannot increase merely by the production in a few cities of certain articles meant for their daily use. Whatever may be the increase in the production of such articles, the purchasing power of the masses can only increase when the masses, largely agriculturists, add very much to what they themselves now produce. This may not be true of every country. But it is true of every country with circumstances similar to India in which the predominant industry of the people is agriculture. For India, there is, thus, no other programme possible or profitable except that of a vast increase in agricultural production.

The Example Of China

"Without the aid of any large extension of mechanised cultivation or the use of artificial fertilizers, the fields of China give to their nation twice the quantity of paddy or wheat per acre that our Indian fields can produce, and this is because the Chinese agriculturist gives to his field the food nature has designed for it. For thirty centuries, and probably many many more, all the wastes, all the refuse, all matter that otherwise might rot and be a source of disease and epidemic is conserved and transmuted into healthy food for the nation's fields. All animal manure including both dung and urine—from cattle, sheep, goats, horses, camels, pigs, and poultry, latrine matter, both liquid and solid, all kitchen waste and offal, old paper, worn out clothes, bones, street sweepings, wood or cowdung ashes, weeds, green manure, cane trash, fallen leaves, dried vegetation, slaughter house waste and leather waste, all this is searched and gathered from every road, street and pathway, from every home in the cities or the villages, and out of this vast waste is produced vast national wealth, and out of the double yield which China gets from every acre as compared with India is maintained a population far more numerous than our own. It has been estimated that it is

possible to produce in our country 500 million tons of this natural manure we call 'Compost' from the waste that disfigures six and half lakhs of our villages, and by using this waste properly, we can produce enough rice and wheat and millets to feed a population of 50-60 crores of Indians, whereas to-day we are a nation of only 35 crores. For all this magnificent result we need not go abegging to any foreign country either for agricultural machinery or for fuel oils to run it, nor invest crores of valued taxpayers' money. Nothing stands between us and this goal of doubling our crops than the lack of adequate governmental organisation and the inertia of the cultivators."

Lack of 'Drive' and adequate Government organisation is the greatest impediment in the way of improving agricultural industry and increasing the out-put of food. With this clear realisation as expressed herein, who is better fitted to mend matters at top-Government level than the Food Minister himself.

THE PANCHAYAT RAJ ACT IN U P.

Encouragement to Cooperative Farming

With a view to revive self-sufficient rural units and to organise rural economy, the U. P. Government has enacted the Panchayat Raj Act which, it is reported, will come into force from the next year. The Act is intended to create self-governing village communities in small units of villages who will be autonomous bodies for political, administrative and economic purposes. The economic life of the village community is sought to be reconstructed on cooperative lines by creating economic holdings and encouraging cooperative farming. The main features of the Act, as reported in the press, are:—

"Any ten cultivators possessing together 50 acres of land can pool it with their livestock and implements and start a co-operative farm. Cultivation will be carried on by the joint efforts of all the members. Property rights, however, will vest in the individual owners who will have the right to transfer or sell their share with certain limitations. The profits from the farm will be shared on the basis of individual ownership in the farm. Extra profits will be divided among all as wages for work done."

"Co-operative farms will, therefore, strike at the root of fragmentation of uneconomic holdings and surplus labour can be diverted to a revival of village handicrafts which will provide a creative outlet for the energies of the people and brighten up and bring prosperity to their homes and lives. To make Co-operative Farms a success, the Government will give concession in land revenue and provide technical advice, better seeds, cheap credit and consolidate holdings free of cost."

"The days of the exotic intermediary will go. The cultivator will have the psychological satisfaction that the land under his plough is his own, and that he enjoys permanent heritable and transferable rights in it. This is bound to give him incentive for efficient cultivation. Should he get tired of his land he is not forced to cling to it. Subject to certain conditions that will guard against the passing of the land into the hands of non-agriculturists, the accumulation of large holdings and consequent re-emergence of the zamindar, the cultivator will have the right of transfer."

"This in all cases, will be made through the agency of the village community which will give first preference to owners of uneconomic holdings and landless agricultural labourers. No subletting except in the case of disabled persons, and further sub-divisions of small uneconomic holdings will be permitted. The owner must cultivate the land himself and the right of succession will be governed by the provisions of the present Tenancy Act to prevent fragmentation and sub-division of holdings."

"The village community will own all arable land, abadi, waste, water-lands, forests, tanks, wells, pastures and markets. Hitherto these were considered to be the property of landlords. The village community will then act as the agency for implementing schemes of agricultural development, co-operative finance and marketing. Co-operative farming will also be encouraged and with the State's help rural U. P. may, in the not too distant future, find a net-work of such farms.."

The measure is pregnant with great possibilities for reconstructing village economy. It all depends on the general development of the village communities and their sense of civic responsibility to execute various schemes intended for development. Left to themselves, it is at best a long-term measure unless backed by vigorous Government drive.

Increase in food and agricultural production is an important aspect of rural economy. There are other aspects showing increasing economic standard of the people of the area which are illustrated by the following table:—

Comparative Statement of Progress for the years 1938-39 and 1947-48

RURAL DEVELOPMENT CENTRE, DEORI

ADARSHA SEVA SANGHA, POHRI, MADHYA BHARAT

S. No.	Items.	1938-39 A.D. Samvat 1995.	1947-48 A.D. Samvat 2004.	Increase in 1947-48 over 1938-39.	Percentage of increase	Remarks.
1.	Population.	1117	1162	45	4%	
2.	Land under cultivation.	4110 bighas.	4848 bighas	738 bighas.	18%	
3.	Agricultural production.	5356 mds.	12142 mds.	6786 mds.	126%	
4.	Self-sufficiency in food production	68%	120%	.....	...	(20% surplus).
5.	Total income.	Rs. 13,221/-	Rs. 1,47,894/-	Rs. 1,34,673/-	1020%	More than 10 times.
6.	Average income per head per annum.	Rs. 11/12/3	Rs. 127/4/5	Rs. 115/8/6	1020%	,, ,,
7.	Total debt	Rs. 16,197/-	Rs. 15,268/-	Rs. 929/- less	6% less	NOTE:—With 1020% of increase in the average income and thereby 11 times increase in the paying capacity of the people, the remaining volume of debt in proportion is almost inconsiderable.
8.	Number of families free from debt.	60	133	73	122%	
9.	Milk-yield.	1809 mds.	2316 mds.	507 mds.	28%	

It is significant that the total income of this unit, which was Rs. 13,221/- in the year 1938-39 increased to Rs. 1,34,673/- in the year 1947-48 showing more than 10 times increase in the average income of the people. The yearly income per head which was Rs. 11/12/3 in the beginning of our development programme, now stands at Rs. 127/4/5 which records remarkable improvement in the economic standard of the people.

The Technique

Taken as a whole, this is mainly an agricultural area. In the prewar time, when this area was taken up for development it was not a period of food-famine or scarcity anywhere in the country more so in this particular part where food commodities were in plentiful supply. Increased production of food could not have made a deeper appeal to the agricultural producers under the circumstances. Of course, the money-value of their produce was awfully poor and they could easily

TURNING FOOD DEFICIT AREAS INTO SURPLUS

AN EXAMPLE OF 'DEORI' RURAL DEVELOPMENT CENTRE

By: G. K. Puranik

IN the course of my two meetings with the Food and Agriculture Minister of the Government of India, Shri Jairamdas Doulatram, he evinced keen interest in the work of rural reconstruction of the Adarsh Seva Sangha and particularly in that aspect of it which pertains to the increase of production of food. At his instance, a Comparative Statement of progress of 'Food Production' at 'Deori' centre comprising of 7 villages of Pohri (Madhya Bharat) was prepared and submitted to him for his information and use. In a period of 9 years between 1938-39 and 1947-48 covered by the comparative chart in question (appended herewith), the centre has registered an increase of 126% in the production of food in the area under its jurisdiction.

When this unit of villages was taken up for intensive 'Production Drive' by the Sangha in the year 1938-39, it had a population of 1,117 souls and the aggregate production of food commodities (cereals and pulses) in the area was 4,019 mds. At the rate of 1 lb. per head per day, this quantity could only satisfy the nutritional needs of 68% of the population and the area was short of food self-sufficiency to the extent of 32%. By orgauised, systematic and intensive effort at production during these 9 years of experiment, the aggregate food production of the unit has come up to 8,138 mds. showing an additional increase of food by 4,119 mds. The unit has not only become self-sufficient in its food requirements, but it can also lay claim of being a surplus area by 1481 mds. or 20% more, over and above the requirements of its population.

The 'Centre' has been maintaining systematic and regular records of agricultural production of every family in the unit for the last 10 years and more showing how production has increased from year to year. On an average the production in this area has increased by 14% every year. On the basis of the past experience, it may safely be said that with proper organisation and equipment and organised effort of the people, it should not be difficult to bring about yearly increase in agricultural production between 5 to 10% in a reasonably suitable agricultural area.

That an experiment of this nature should attract the attention and please the heart of the Food and Agriculture Minister of the Government of India is only natural. At his expressed desire that the experiment be given early publicity in 'The Rural India' in the interest of providing inspiration and practical guidance to the workers in the cause of food production in the country, we take this opportunity of publishing it in the present issue in the interest of its wider utility. The Comparative Statement referred to above presents detailed study of increased production obtained at this centre in various agricultural commodities between the years 1938-39 and 1947-48 and also shows the increase of area under cultivation during the same period.

Comparative Agricultural Production Chart for the Years 1938-39 and 1947-48.

Rural Reconstruction Centre—Deori (consisting of 7 villages),
ADARSHA SEVA SANGHA, POHRI, MADHYA BHARAT.

Population—1117 in 1938-39 and 1162 in 1947-48.

S. No.	Item.	Area under cultivation		Increement in 1947-48 over 1938-39.		Production in maunds.		Increement in 1947-48 over 1938-39	
		1938-39 A. D. Samvat 1995.	1947-48 A. D. Samvat 2004	Area	Percentage	1938-39 A. D. Samvat 1995	1947-48 A. D. Samvat 2004	In maunds	Percentage
1	2	3	4	5	6	7	8	9	10
	CEREALS	Bighas.	Bighas.	Bighas.		mds. sr. ch.	mds. sr. ch.	mds. sr. ch.	
1.	Wheat	1083	1130	47	5%	1695-20-0	3506—2-0	1810-22-0	112%
2.	Jwar	1197	1278	81	7%	1265-13-0	2788—5-0	1522-32-0	120%
3.	Maize	127	117	10 Less	—	193-21-8	243-37-8	50-16-0	26%
4.	Paddy	4	57	53	1325%	35-20-0	169—4-0	133-24-0	376%
5.	Rala, Rali, Kutki, Kodo	60	85	25	42%	30-15-0	68-10-0	37-35-0	125%
						249-12-0	239-25-0	—	—
6.	Barley	28	28	equal	—	77-30-0	132-23-0	54-33-0	70%
7.	Bajra	4	—	4 Less	—	5-11-0	—	—	—
	Total...	2503	2695	192 more	8%	3552-22-8	7147-26-8	3595—4-0	101%
	PULSES								
8.	Mung	117	132	15	13%	20-26-8	511-26-0	490-39-8	2450%
9.	Urad	149	259	110	74%	31-27-8	134—6-4	102-18-12	76%
10.	Arhar	109	245	140	129%	93-28-8	182—9-8	88-21-0	49%
11.	Masoor	24	31	7	29%	17-24-8	21-30-0	4—5-8	18%
12.	Gram	468	100	368 Less	—	303—8-8	141—2-8	—	—
	Total...	867	767	100 Less	12% Less	466-35-8	990-34-4	523-38-12	112%
	OTHER CROPS								
13.	Ground nuts	158	149	9 Less	—	775-15-8	979-35-0	204-19-8	26%
14.	Gur	10	105	95	950%	38- 5-0	1938-16-0	1900- 5-0	5000%
15.	Tilee	268	485	217	81%	242- 8-4	420-20-0	178-11-12	74%
16.	Alsi	139	429	290	209%	110-13-4	317-13-0	206-39-12	188%
17.	Ajwain	8	109	101	1263%	11- 0-0	188=30-0	177-30-0	1618%
18.	Mirch	20	10	10 Less	—	21-37-8	44-24-8	22-27-0	103%
19.	Jira	35	27	8 ,,	—	1- 3-4	10-30-0	8-26 12	800%
20.	Dhania	11	16	5	46%	23-10-8	33- 6-0	9-35-8	43%
21.	Menthi	0-8 Biswa	—	Biswa 8 Less	—	1- 5-0	—	—	—
22.	Cotton	10	5	5 ,,	—	8-25-8	3-14 8	—	—
23.	Sun, hemp	63	50	13 ,,	—	59- 1-0	66-27-0	7-26-0	12%
24.	Tobacco	17	1	16 ,,	—	44-22-0	—	—	—
	Total...	739-8	1386	646-12 More	87%	1336-26-12	4004—0-0	2667-13-4	200%
	Grand Total...	4109-8	4848	738-12 More	18%	5356- 4-12	12142-20-12	6786-16-0	126%

PROVINCIAL FINANCES

By: **Prof. Lakshman Prasad Sinha**

THE budget estimates of all the Provinces of the Indian Union for the year 1948-49 are before us. A peep into these estimates will bring before us a rough and ready picture of the Economy of the different Provinces. All the figures are in crores of rupees.

Province	Revenue	Expenditure	Surplus or Deficit
Bombay	41.33	44.02	(−)2.69
Madras	50.32	55.93	(−)5.61
W. Bengal	31.18	31.96	(−) .78
U. P.	45.87	50.57	(−)4.70
Bihar	21.57	20.09	(+)1.48
C. P.	15.29	15.74	(−) .45
Assam	13.11	14.61	(−)1.50
E. Punjab	11.13	17.82	(−)6.69
Orissa	6.81	7.50	(−) .69

From the outgoing figures it is clear and apparent that almost all the Provinces have small or big deficits with the single exception of Bihar which alone shows a surplus on the basis of existing taxation. This trend clearly indicates that the expenditures are on the increase and revenues are falling. Substantial allotment for the Post-war reconstruction schemes is the main reason for the growth of expenditure except in East Punjab whose deficit is due to provision over refugee problem. The partition of the Provinces, the communal turmoil that followed, the uprooting of millions of people and the resettlement problems, the security measures, all these imposed new and pressing demands on the Provincial Finances. Under these pressing circumstances the deficits can easily be explained. The deficits would have been huge and tremendous but for increased grants and aid from the Centre to finance Post-war development schemes. The deficits have been narrowed down either by some measures of taxation or by drawing upon the Revenue Reserve Fund. To convert a deficit budget into a balance or a surplus budget by questionable means does not show any financial statesmanship. The surplus budget does not necessarily reflect financial prosperity when one knows and witnesses the glaring and grim poverty that stalks the land and tarnishes the fair name of the country. It is wrong to present a picture of satisfaction when there are no apparent reasons for doing so. A surplus budget is an outmoded, out of date method of presenting a budget, which has been discarded in all progressive countries. Balanced budgets now stand for financial timidity. Surplus budgets in view of the grim poverty and glaring inequality, amount to a mockery. Hence deficit budgetting is not bad in itself provided it tries to alleviate the sufferings of humanity. The policy of deficit budgetting has received and is receiving much attention in recent years. In U.S.A. it has been called "Pump-Priming" and "Leading for spending plan". It is a measure by which Policy of Economic Expansion can be brought about. Mr. Shanmukham Chetty, our Ex-Indian Finance Minister in his broadcast talk on the "Budget" declared that we have reached the 'closing era of deficit budgets". If we also share the view of the Finance Minister that a doom awaits for the Nation We should think now in terms of "Deficit Financing. Here is our time to spend more in order to obtain a high standard of life. To achieve this goal, surplus or balanced budgets will not

be helpful, only deficit budgets will solve this problem and the ideal will be realised.

As has been pointed out above the revenues are on the decline and the astounding increase in the income-side of the Provincial Budget, a feature of the war years is not noticeable now. The chief sources of Provincial Finances have either registered the same income or showed decline. Land Revenue has generally stayed out and in certain cases it has actually declined. There is a small increase noticeable under stamps and registration fees. Forest Revenue does not show any appreciable change, but is likely to go down. Sales Tax and Entertainment Tax though still maintaining their buoyancy, are much below the war time peak. The recent changes in the Provincial share of the Income Tax as announced by the Government of India will go a long way to change the income complexion of the Provincial Governments. According to the Niemeyar Award the share fixed was lower than at present. The present changes brought about are visible and clear from the figures given below:

Provincial share of Income Tax

	Old	New
Madras	15	18
Bombay	20	21
W. Bengal	20 (undivided)	12
U. P.	15	19
C. P.	5	6
E. Punjab	8 (undivided)	5
Bihar	10	13
Assam	2	3
Orissa	2	3

This new change in the percentage of the divisible pool of the Income Tax is in keeping with the vociferous, persistent and crying demand of all the Provinces for effecting the change in the share. The fall on revenue side under the head "Excise" is in keeping with the Policy of Prohibition which has come to stay. Madras will go dry completely during the present financial year losing thereby Rs. 17 crores which was her income under this head before the launching of "Prohibition Policy". United Provinces and Assam Governments have to face a loss of Rs. 62 and Rs. 60 lakhs on account of extension of Prohibition scheme. East Punjab has declared 'Kangra district as dry district'. For Bombay Revenue there is a further drop of 170 lakhs under this head. Bihar loses Rs 25 lakhs nearly inspite of the fact that scheme of Prohibition has not been launched as yet. If the Policy of complete Prohibition is adopted then the loss will be of the magnitude of Rs. 45 crores taking all the provinces together. Thus Prohibition will make a big hole in the Provincial Revenue, as it has already done in case of certain Provinces. The loss will be all the more greater in enforcing the Policy of Prohibition. Total net loss may amount to something like Rs. 55 crores or so. To surrender so much revenue in the grim present is of doubtful wisdom. Besides by mere introduction of Prohibition and declaration of 'dry' districts and areas will not stamp out underground drinks. Human nature cannot be changed in a hurry, but by persistent appeals and persuasions human habits can be made to undergo a transformation. This is apparent from the experiences of countries like England, Scotland and Sweden where heavy drinking was rampant half a century ago. The change has been brought about by temperance campaigns, by propaganda, by

understand what rising standard of money-income meant to them. The Sangha, therefore, fixed an income target of Rs. 5/- per head per month for this unit of villages, which had to be reached by stimulating planned and organised effort at increased production through gradual stages. This average income standard placed before the people then for organised effort and attainment was five times higher to their standard of income and appeared to be a Utopia, beyond the villagers' reach of imagination. Later on with the coming in of inflation this standard of average monthly income per head had to be increased from Rs. 5/- to Rs. 30/-.

The formation and proper functioning of the Unit Panchayat and carrying out of its decisions, organised and planned drive, expert guidance, intensive public education for increasing standards of production and rising scale of income through regular and systematic records maintained for every family in the area, ever helpful and encouraging attitude of the master of the Jagir, Shrimant Shitole Sahib, and active and willing cooperation of the village people themselves contributed to the happy result of the experiment. With favourable conditions, the experiment is capable of producing similar results in different areas in the country and help in improving the present depressing food situation facing the country.

The New Programme

Under changed conditions of food famine in the country the Sangha has adopted a different technique to give vigorous push to the programme of food production in this area and has extended the scope of operation of this experiment to the area of 600 square miles of Pobri Jagir consisting of 220 villages, each unit having 4 villages within its jurisdiction. A trained worker is to be appointed to take charge of a Unit of villages. His business is to take complete agricultural census and survey of the area, fix up targets of production of every patch of land under cultivation, maintain records of production—both potential and actual—of every agriculturist family, organise facilities for better and increased production on cooperative basis and progressively raise the standard of production by about 10% every year. There will be three Food Production Organisers for the area who will be responsible for proper checking and supervision of the working of the scheme in an allotted number of units of villages. At the head of the working of the scheme will be a Director for Food Production who will be responsible for planning, general guidance, checking the progress from time to time and taking review of the progress of the scheme in the light of actual results. A statistical department under a trained statistician forms an essential equipment of this new organisation, which will work under the Director of Food Production.

As per agricultural census taken by the Sangha in the year 1941, the population of this area of 220 villages, now taken up for 'Food Production Drive' was 49,295 and the production of food was 1,94,986 mds. showing deficit of 26,841 mds. or 12% from the point of view of self-sufficiency. New census is being taken now to ascertain the latest food position of the area prior to launching the 'Production Drive.'

With sincerity of motive, trained and efficient guidance of the workers and responsive and cooperative people this experiment is capable of being tried in any part of the country with more or less similar results. The country's food situation demands that we may have a net-work of such small scale food production experiments in all parts of the country which would help in converting most of our food deficit areas into surplus.

VILLAGE INDUSTRIES AND FOOD

By: J. C. Kumarappa

WHAT is necessary for us is to have a clear conception of the type of the social order we envisage. The economic, social and political structure will have to take its shape with this goal in view. Only then will there be co-ordination in the different departments of life.

As it is, for instance, the Educational Department is planning a curriculum which will probably have nothing whatever to do with life in India. They may plan on the lines laid down for English life in Oxford or Cambridge. Similarly, the industrialists are keen on introducing large scale industries to produce radios, railways and aeroplanes while the bulk of the people are starving and are underclad. Planning must be national and the central figure in all planning must be the villager as we find him in India. Unless this pivot is clearly set out our whole effort will be invain. Any planning which deserves the term planning will therefore be set in such a way as to meet the needs of the people of our country. In such a plan there will be room for all manner of co-operation between units which will ultimately relieve the distress and poverty that stalk the land today.

The method of production, distribution and consumption also will be related to the conditions prevailing in our land. In a country which is largely agricultural and where the people are living on the barest minimum of food rational planning will centre round agriculture which will have as its main feature, not exploitation of soil for all and sundry purposes, but production of food and raw materials for clothing. We would even suggest that in our country only such functions as look after the materials for people's food and clothing should be detailed out to the Agricultural Department. All exploitation of the soil for industrial purposes, such as production of sugarcane for the mills, oil seeds for foreign trade, should all be brought under a separate and distinctive department which will not receive the priority and support of government attention and finance.

The people's food will then be ensured as land will be allocated to grow such materials as are needed by the people, not only for current use, but also sufficient materials for building up a reserve for one or two years. After providing for these if there be any surplus land available only such surplus land can be utilised for industrial exploitation.

With the advent of quick transportation along with the expansion of credit and monetary exchange the tendency has been to utilise land for trade and commerce rather than for food materials. This is one of the great factors behind our shortage of necessities in India. Until this misuse of land is set right no amount of propaganda, through the press and platform, on growing more food will solve the problem.

cinema and lectures. Wine must be made more expensive and more scarce. Drinking must be condemned. Let the State tax the wine till it breaks the back of the drunkards and use the revenue to condemn drunkards from house tops. Mr. D. C. Driver also does not favour the Policy of Prohibition and surrender of so much revenue on this account. The leading economists of the country are not in favour of surrendering so much revenue in the grim present.

In order to replenish the declining and dwindling resources of the Provinces, the Provincial Ministeries are frantically and desperately searching for new sources of revenue to make good the losses which they have sustained and are likely to incur on account of Prohibition Programme. As regards taxation most Provinces have increased the rates of existing taxes and some have embarked on the road of new taxation to bridge the gap between revenue and heavy expenditure. Some Provinces again have drawn from the Reserve Fund accumulated during the war years to tide over the gap of heavy deficits. In Central Provinces, no new taxes are proposed for the year 1948-49. There are no fresh taxation proposals in West Bengal budget as well. The United Provinces Government expects to wipe out its deficit of Rs. 4.70 crores by General Sales Tax and a Tax on Agricultural Income. The General Sales Tax is expected to yield something like four crores of rupees, whereas the Agricultural Income Tax will bring approximately one crore of rupees to the Provincial Exchequer. Similarly Bombay, Madras, Bihar and East Punjab Governments have announced for enhancing the rates of Sales Tax and Entertainment duties. In short to replenish the financial shortcomings these taxes have been tapped. In Madras the enhanced General Sales Tax and Entertainment Tax will bring about additional Revenues of Rs. 3¾ crores and 30 lakhs respectively. In Bombay an increased sales tax on luxury articles, a new stamp duty on transactions in the Bombay Cotton Market, and increases in the present Betting Tax, Entertainment duties and Sales Tax on Petrol will fetch an additional revenue of rupees one crore which will partly cover the estimated deficit. Both Madras and Bombay, inspite of enhanced rates of taxation could not balance their budgets and hence had to fall back upon their Reserves. The Bihar Government inspite of surplus budget proposes to amend and consolidate the Bihar Agricultural income tax, court fees and stamp duties. Their surcharges will be increased from 25 percent to 40 percent. This year for the first time Bihar Government has brought sales of coal, coke and Mica fully within the purview of the sales tax. The East Punjab Government expects to add to the Provincial Revenue a little over one crore of rupees from uniform sales tax, increased petrol tax from one-half annas to three annas per gallon, raised property tax from 7½ percent to 10 percent and enhanced Entertainment duties. The enhancement of Excise duty on country spirit, Indian made foreign spirit, opium and Bhang is estimated to yield an additional revenue of Rs. 33 lakhs.

Another important feature which strikes a student of Provincial Finance from the perusal of the budgets is that almost all the Provinces have to bear the brunt of the refugee problem created as a result of partition of the country. East Punjab has to bear the major share of this burden. She has to make a tragic provision of 7 crores of rupees for relief and administration of refugees besides granting of loan to the extent of Rs. 2.45 crores for their rehabilitation. Other Provinces have also shared the burden and provided sums for relief and rehabilitation of refugees and happily for them the Central Government have agreed to meet their whole of their expenditure on this head.

On the expenditure side there is an important item of law and order which receives due attention. Police expenditure has grown out to a very huge proportion in nearly all the Provinces. In case of some border Provinces there are ample justifications for increase under this head. This fact is truly reflected in East Punjab Budget. She makes a provision of Rs. 2.69 crores for Police out of the total of Rs. 4.81 crores for civil administration. This increase is a remarkable contrast against the fact that in undivided Punjab Police expenditure was 14% only; whereas in East Punjab alone Police expenditure amounts to 25% of the total income. Police expenditure is high and heavy in Bombay, U. P., Madras and other Provinces as well. Bombay has provided Rs. 5.93 crores, United Provinces expects to spend Rs. 6 crores and 97 lakhs. Assam, another border Province, provides Rs. 1.13 crores under this head. Bihar's Police expenditure has mounted from Rs. 132 lakhs in 1944 to something double of this amount in the current year budget. Thus Police has taken a big slice of the expenditure of the budget. This will go on mounting and increasing till the relations—strained relations—continue to reflect in the atmosphere.

Expenditure on other items has also jumped up in almost all the Provinces. In matters of Education, the Province of Bombay is in the front line. She has gone a step further and her Minister has selected an area – a backward area for all round intensive development–educational, social and economic – and provided a sum of rupees one crore to cover a period of four years from 1948–49 for the same. In Central Provinces to make the scheme of social education a success, the Minister will take recourse to conscription of educated men in the Province. All the methods and vehicles of education, propaganda, film and radio will be applied to drive away the bane of illiteracy. United Provinces Government is spending Rs. 5.31 crores over Education, an amount which is just the double amount in comparison to the last year. Token provision of Rs. 1000 on each count has been provided in Orissa budget for Agricultural and Engineering colleges. Assam is expected to spend something like Rs. 82 lakhs on education. Only Bihar lacks any Education programme. There is wide disparity and gap in this Province under this head in comparison to expenditure on other heads. Education receives scant courtesy in Bihar Budget. The relief which was granted to teachers of Primary and Secondary schools which amounts to Rs. 47 lakhs is being continued this year also. This is the only bright spot in the Education Budget of this Province.

Having considered the general Revenues and Expenditure aspects of the Provincial Finances, let us probe into the Provinces Programmes of reconstruction and development. The development schemes of the Provincial Governments have received sympathetic treatment at the hands of the Central Finance Minister in the sense that "the budget for the next

year includes a provision of Rs. 30 crores for grants to Provinces for development and Rs. 34 crores for loans to them". The Provinces are to spend an equal amount granted to them by the Centre. This is the only condition laid at the door of the Provinces. This system of grants needs thorough readjustment in view of the growing demands of the Provinces. A committee of the Constituent Assembly under the Presidentship of Mr. Sarkar has been formed for reallocation and readjustment of resources between the Centre and the Provinces.

All the Provinces have earmarked huge amounts for development schemes in which Irrigation, Grow-more Food Plans, setting up of Industries and other Plans figure prominently. The U. P. Government places Rs. 24 crores under this head. The Bihar Government earmarks Rs. 5½ crores. Similarly C. P. Government goes fast with the Multipurpose Rivers Projects on Narbada and Tapti Rivers. In Bihar and West Bengal, the establishment of Damodar Valley Corporation will go a long way to wipe out the misery on the face of the masses of these Provinces. The Orissa Government intends spending something like Rs. 1.81 crores on development schemes. All the Provinces are planning feverishly to industrialise their economies by setting up industrial plants on their soil. They are also trying to increase their cereal production so that they may not have to face the pangs of hunger and starvation. But due to war fever and war mongering propaganda on the international horizon and conflict and strain between the two dominions of India and Pakistan the prospects of realising the dreams of rapid industrialisation and Ruralisation have received a setback. However there is a gleam of hope and ray of sun shine in this that the Programme of industrialisation and Ruralisation can go on well in another way and in another direction. The development of cottage industries can be undertaken without any let or hindrance whatsoever. The welfare of the country lies in cottages and hence development schemes should have given due preferences and priority to this aspect of the problem. But we find that not a single Province has provided or given a due place to the cottage industries in their schemes of post-war development. In rural development the scheme of cottage industries must play a vital and important part. Besides we do not find any mention of the abolition of zamindari system or other land tenure system in the various budgets. The scheme of Nationalization of land does not figure at all in any budget whatsoever. These are some of the important lacuna in the schemes of development and reconstruction plans of the Provinces.

The inroads of expenditure, in face of which revenues toil painfully, the various Finance Ministers have thought out Plans and schemes and some of them have adopted to tap certain sources to increase their revenues. In Madras the State trading schemes have been profitable and have added a sizeable income to the Provincial Exchequer. The Nationalization of Electric Power Supply and Nationalization of Road Transport services have given a considerable sum of money to U. P. Government. Similarly the Bihar Government proposes to establish Phosphate and Silk Factory under a Corporation in which the Government will have a controlling interest. Partial socialisation of Road Transport is also announced. All these measures will strengthen the Finances of the Provinces. The introduction of the Estate duty and participation of the Government in industrial enterprises and Agricultural Farming will replenish their finances and strengthen their position. These are some of the new sources which can be tapped and the position which is shaky now can be stabilised and strengthened. Further more policy of borrowing can be utilised and adhered to, to fortify the financial stability of the Provincial Exchequers.

A NEW OUTLOOK ON AGRICULTURE IN INDIA

By: K. M. Desai

INDIA is facing an unprecedented food and economic crisis which can only be averted if agriculture in the country secures its rightful place. Though much water has flown on the subject of agriculture, there seems hardly any appreciable progress made anywhere for rehabilitation of agricultural industry—the very life blood of the nation. It is high time the agriculture in India receives due importance in the economic structure of the country. Small efforts produce small results. We practically refuse to gain from the experience of the past that the isolated and irrelevant efforts under hit-or-miss policy were found to bear hardly any fruits except a sort of window dressing. The need for the day is a new outlook and a new angle of vision for speedy vitalization of rural India and for that a land reform and a mode of farming suited to peculiar conditions and high traditions of this country will have to be evolved. Abolition of zamindari or promulgation of tenancy acts may not alone offer a lasting cure of the economic ills, because, when the intermediaries in agrarian structure disappear, there would crop up other parasites if the agriculturist is not simultaneously protected against principal odds of land fragments, lack of finance, improper marketing and above all lack of business-like or scientific application of knowledge in the development of agriculture. It becomes imperative therefore to devise a mode of farming which may tackle at a time all the above four disabilities. Four types of farming are known to-day—the collective farming as in Russia, the capitalistic farming as in U.S.A. and U.K., the cooperative farming as in Palestine and the individual farming as in India. Of these modes of farming, collective and capitalistic farming are not suited to conditions in India, the spirit of unity is found lacking for cooperative farming and the numerous disabilities that normally associate with individual farming have been the bottlenecks to any appreciable progress in agriculture. A new system with all good elements of the above four may succeed with us. This new system of farming may be called the Agricultural Business Cooperatives. These would aim at organising agricultural industry on business lines, metamorphosizing the subsistence farming to plus farming. This new system in its substance is explained below.

The business is well pursued by seasoned businessmen who have besides bags of money to-day. They should evince interest in developing agriculture as

lands, forests etc. The Government may only impose restriction on the wasteful use of this land.

(c) There would be no restriction of period of management or possession of shares (if a cooperative like W.L.A. cooperative is started).

(d) The net profits at the end of each year will be distributed as follows:—

70% dividend to share holders,
10% to reserve fund,
10% to managing directors,
10% as bonus to labour and staff.

Advantages

(a) Agriculture will be treated as an industry.

(b) The intelligentsia, industrialists, capitalists and scientists will all join in a common enterprise to develop agriculture substantially and scientifically in a scheduled period.

(c) The Government will not feel the burden of creating huge finance so necessary for putting Indian agriculture on sound economy as would be possible to be done under this system.

(d) The economic condition of the agriculturist class forming a large mass will be considerably enhanced and with that the standard of living in the country will substantially improve.

(e) The land of various denominations will find its proper use with the application of all available results of scientific research.

(f) The much vexed problem of alienated land and intermediaries will be solved to the benefit of all.

(g) The production of food and raw materials for industries will be regulated and stepped up according to requirements from time to time.

(h) The agricultural land will be handled scientifically with less chance of its deterioration. The advantages, as by soil conservation practices, greater irrigation facilities etc., will be better realized.

(i) The cattle wealth will substantially improve both in quality and quantity.

There would be several other advantages by adopting this system.

Though one cannot forecast a smooth sailing of the above system of organizing agriculture business cooperatives, they, after encountering natural and man-created obstacles and quite a lot of jerks and jolts, may, in a long range be found greatly useful to improve the fast deteriorating economic position of the country and infuse a new life in the dry bones of the villages and thereby rebuild the economic structure of the whole country. The countries like Russia, U. S. A., U. K. and others could only make desirable progress in agriculture by adopting revolutionary processes commensurate with the hugeness of the problem and if we wish to pool all available agricultural resources for better production and make it greatly remunerative, we would first have to push aside the fanatic conservatism in thought and action. A definite change in our outlook on agriculture in India will be an essential prerequisite for any such success whether by adopting a system pictured above with necessary modifications or any other system which will help agriculture to shape its own good future and thereby of the teeming poverty stricken millions of this country.

MECHANISATION OF AGRICULTURE IN INDIA

By: D. G. Dakshindas

"A thorough and businesslike investigation of the economics of power cultivation appears to us to be specially called for in the C. P. where the use of such machinery seems to offer the only hope of bringing back to cultivator the extensive areas of land at present lying desolate owing to infestation with deep-rooted kans grass."

The above recommendation of the Royal Commission on Agriculture in India (1928) seems to be coming true now with the launching of the Tractor Scheme. Prewar India, it is estimated, had about 248 Tractors as against 15,000 at work in a small country like England. In Russia which has made exemplary advance in mechanised agriculture and through it in food production, the tractor number was increased from only 6700 in 1928 to 84500 in 1937. The Food Grains Policy Committee recommended that about 3 million tons of extra food grain can be produced by reclaiming the cultural waste lands in the country. The first of such experiments was started during last season in the U. P. where over 45,000 acres of waste land were reclaimed with the help of 200 tractors. Another experiment has been started in East Punjab where Central Government has agreed to send 200 heavy tractors. In the C. P. during the 5 year period ending 1952-53 it is proposed to reclaim 1,10,000 acres of kans infested land. Already 2 units of 15 tractors have been put in operation in the Saugor district. Similar schemes are being put up in other provinces as well, and in addition to the existing tractors in the provinces, the Central Tractor Organisation of the Government of India is to supply more tractors for reclamation of waste land. For the full implementation of the recommendations of the Food Grains Policy Committee about more than nine million acres of land will have to be reclaimed in various provinces and states.

To meet this demand a large number of tractors will have to be requisitioned. The Central Ministry of Agriculture placed indents for 769 tractors from the U.K. and U.S.A. out of which only 375 are reported to have been received so far. Attempts are also being made to manufacture tractors in India. A factory in Bombay has started the manufacture of tractors and tractor implements. On the 16th September 1948, Pandit Jawaharlal Nehru launched the first India built tractor. The factory is capable of producing 500 diesel tractors per year.

It can be inferred from the above that quite a large number of tractors will shortly be available and operating in various parts of India. What is the future of these tractors? How are they going to be utilised fully? The main object of the tractor scheme at present is the reclamation of waste land. For this purpose the tractors will be operating only for a part of the year. How are they going to be utilised for the rest of the year when there is no ploughing work left for them? For the present, Government is taking possession of land (e. g. by law as in C. P.) to have large contiguous areas so that tractors may operate fully. What is the future of such reclaimed land in relation to the owners and the type of farming to be practised in future? These

industry and come forward to invest their intelligence, capital and capacities to manage the industry on sound economy.

All the agricultural land should be classed under three categories:

(1) Cultivated land blocks which would include the village with its cultivated land and necessary area for pastures, habitation etc.

(2) Culturable waste land blocks. These will be the areas in a block of more than 2000 acres.

(3) Waste land blocks. These will be the areas in blocks of more than 500 acres.

The agricultural and thereby the economic development of all the above categories of land may be brought about under the new system in the manner stated below.

1. Cultivated Land Blocks

(a) The present villages with their cultivated areas together with necessary area for common pastures, woodlands, habitation ground etc., will be considered a unit for this purpose.

(b) The value of land with each land-holder will be assessed either by arbitration or on the basis of 25 times the land assessment. Thus all the holdings in the village will be assessed in terms of cash value.

(c) The experts of agriculture and industries will decide the capital that would be necessary to develop the whole village as a unit.

(d) A management on business lines may be proposed with the above capital, part of which will be shared by the land-holders in the village on the strength of the assessment of their holding as per para (b) while the rest may be subscribed by non-land holders within the village or outside it. Compulsory subscription from other better organized industries like textile, iron and steel etc. may even be called for. Government, besides offering a part of the capital, would encourage the enterprise by giving all possible facilities and concessions.

(e) There would thus be share-holders, both land holders and non-land-holders, and will form agricultural business cooperative with limited liabilities registered under the Companies' Act.

(f) A managing committee comprised of members elected from land-holders and non-land-holders will help the cooperative in the management of lands. The chairman of this committee will be the managing director of the cooperative.

(g) The agriculturists and other labour of the village will be paid by the cooperative according to the quality and quantity of work put in by them. Allied cottage and village industries, as may be possible, will also be organized and developed.

(h) The cooperative will be run on business lines and the net profits will be divided at the end of each year in the following manner:—

50% as dividend to share holders,
15% to go as reserve fund,
15% as commission for managing directors and allowance to managing committee,
15% bonus to labour,
5% bonus to staff.

(i) Of the dividend that would fall to the share of land holders 50% will be paid in cash and 50% will be credited on their individual names to make 'land-owners' reserve fund' as against the general reserve fund of the cooperative.

(j) The land holders at the end of 15 years will be only those who tilled the land or participated directly in management before and after the cooperative is started. All intermediaries, absentee land lords, inamdars and such other vested interests will be automatically eliminated at the end of 15 years when their shares will be purchased by land holders unless they directly participate in cultivation or management of lands. There would again be restrictions on the possession of shares by an individual land holder at the end of 15 years within the limits of minimum and maximum fixed at the outset. This will assure fairly equitable distribution of village wealth after 15 years and adequate economic status to one and all. Equipped with the business experience of 15 years in the management of agriculture, the land holders alone will manage and share the profits of these cooperatives.

(k) Limitations and restrictions of sale, mortgage, transfer etc., to only land holders will be imposed after 15 years.

2. Culturable Waste Land Blocks

(a) There may or may not be private owners of such lands which may be in a block of over 2000 acres.

(b) C. W. L. (culturable waste land) agricultural business cooperative as it would be called as against C. L. (cultivated land) agricultural business cooperative in the former case, may be started for such culturable waste land blocks with the necessary capital subscribed by any person irrespective of whether he owns the land or not.

(c) The land owners or the Government whosoever owns the land may either sell off the land to the cooperative or purchase shares to the value of the land fixed on the basis of 10 times the land assessment or as may be fixed by arbitration if the land assessment is not fixed.

(d) This C. W. L. A. B. cooperative will run its business for 25 years and the net profits within this period will be distributed as follows:—

60% as dividend to share holders,
10% as reserve fund,
10% to be paid to managing directors,
5% allowances to managing committee,
10% bonus to labourers,
5% bonus to staff.

(e) Within the period of 25 years agriculturist families who till the land or directly participate in the management will be settled permanently on the land and they will alone hold the shares after 25 years when the management must be transferred to them. Minimum and maximum number of shares that could be held by each after 25 years will be fixed at the outset.

(f) The share value at the end of 15 years in case of C.L.A.B. cooperative and 25 years in case of C.W.L.A.B. cooperative will be fixed up on the basis of original share value plus 15% of the total value of dividend per share paid within the periods of 15 and 25 years respectively.

3. Waste Land Blocks

(a) Any waste land in a block of over 500 acres will be considered for this purpose.

(b) This land will be sold with very liberal concessions to any person or party who wish to develop it for any agricultural purpose - say for pastures, wood-

lands, forests etc. The Government may only impose restriction on the wasteful use of this land.

(c) There would be no restriction of period of management or possession of shares (if a cooperative like W.L.A. cooperative is started).

(d) The net profits at the end of each year will be distributed as follows:—

70% dividend to share holders,
10% to reserve fund,
10% to managing directors,
10% as bonus to labour and staff.

Advantages

(a) Agriculture will be treated as an industry.

(b) The intelligentsia, industrialists, capitalists and scientists will all join in a common enterprise to develop agriculture substantially and scientifically in a scheduled period.

(c) The Government will not feel the burden of creating huge finance so necessary for putting Indian agriculture on sound economy as would be possible to be done under this system.

(d) The economic condition of the agriculturist class forming a large mass will be considerably enhanced and with that the standard of living in the country will substantially improve.

(e) The land of various denominations will find its proper use with the application of all available results of scientific research.

(f) The much vexed problem of alienated land and intermediaries will be solved to the benefit of all.

(g) The production of food and raw materials for industries will be regulated and stepped up according to requirements from time to time.

(h) The agricultural land will be handled scientifically with less chance of its deterioration. The advantages, as by soil conservation practices, greater irrigation facilities etc., will be better realized

(i) The cattle wealth will substantially improve both in quality and quantity.

There would be several other advantages by adopting this system.

Though one cannot forecast a smooth sailing of the above system of organizing agriculture business cooperatives, they, after encountering natural and man-created obstacles and quite a lot of jerks and jolts, may, in a long range be found greatly useful to improve the fast deteriorating economic position of the country and infuse a new life in the dry bones of the villages and thereby rebuild the economic structure of the whole country. The countries like Russia, U. S. A., U. K. and others could only make desirable progress in agriculture by adopting revolutionary processes commensurate with the hugeness of the problem and if we wish to pool all available agricultural resources for better production and make it greatly remunerative, we would first have to push aside the fanatic conservatism in thought and action. A definite change in our outlook on agriculture in India will be an essential prerequisite for any such success whether by adopting a system pictured above with necessary modifications or any other system which will help agriculture to shape its own good future and thereby of the teeming poverty stricken millions of this country.

MECHANISATION OF AGRICULTURE IN INDIA

By: D. G. Dakshindas

"A thorough and businesslike investigation of the economics of power cultivation appears to us to be specially called for in the C. P. where the use of such machinery seems to offer the only hope of bringing back to cultivator the extensive areas of land at present lying desolate owing to infestation with deep-rooted kans grass."

The above recommendation of the Royal Commission on Agriculture in India (1928) seems to be coming true now with the launching of the Tractor Scheme. Prewar India, it is estimated, had about 248 Tractors as against 15,000 at work in a small country like England. In Russia which has made exemplary advance in mechanised agriculture and through it in food production, the tractor number was increased from only 6700 in 1928 to 84500 in 1937. The Food Grains Policy Committee recommended that about 3 million tons of extra food grain can be produced by reclaiming the cultural waste lands in the country. The first of such experiments was started during last season in the U. P. where over 45,000 acres of waste land were reclaimed with the help of 200 tractors. Another experiment has been started in East Punjab where Central Government has agreed to send 200 heavy tractors. In the C. P. during the 5 year period ending 1952-53 it is proposed to reclaim 1,10,000 acres of kans infested land. Already 2 units of 15 tractors have been put in operation in the Saugor district. Similar schemes are being put up in other provinces as well, and in addition to the existing tractors in the provinces, the Central Tractor Organisation of the Government of India is to supply more tractors for reclamation of waste land. For the full implementation of the recommendations of the Food Grains Policy Committee about more than nine million acres of land will have to be reclaimed in various provinces and states.

To meet this demand a large number of tractors will have to be requisitioned. The Central Ministry of Agriculture placed indents for 769 tractors from the U.K. and U.S.A. out of which only 375 are reported to have been received so far. Attempts are also being made to manufacture tractors in India. A factory in Bombay has started the manufacture of tractors and tractor implements. On the 16th September 1948, Pandit Jawaharlal Nehru launched the first India built tractor. The factory is capable of producing 500 diesel tractors per year.

It can be inferred from the above that quite a large number of tractors will shortly be available and operating in various parts of India. What is the future of these tractors? How are they going to be utilised fully? The main object of the tractor scheme at present is the reclamation of waste land. For this purpose the tractors will be operating only for a part of the year. How are they going to be utilised for the rest of the year when there is no ploughing work left for them? For the present, Government is taking possession of land (e. g. by law as in C. P.) to have large contiguous areas so that tractors may operate fully. What is the future of such reclaimed land in relation to the owners and the type of farming to be practised in future? These

are the questions which strike the thinking public.

For the present, under the Tractor scheme, tractors are mainly utilised for deep ploughing—an operation which can keep the tractor in use for only a part of the year. In the Scientific Monograph No 9 of the I. C. A. R. it is stated that, "As a tractor should be used atleast nine months in a year in order to employ it economically, the scope for tractors will be considerably enlarged if they can be employed for a greater portion of the year on various farm operations, such as ploughing, harrowing, sowing, inter-culturing and belt work."

It is necessary therefore to put the tractor power in use for other works when it is not active in the fields. If the large contiguous blocks of land, acquired at present by the Government under the Tractor Scheme for opening land, are, by some means, made a permanent feature, then partial mechanisation of agriculture-recognised to be essential in India—can be brought about and tractor power usefully utilised for doing operations like harvesting, thrashing, winnowing etc. During off season the power can be utilised for running grinding mills, silage making, chaffing, water-lifting and other belt work.

The main benefit of tractor use does not lie—as is many times thought—in carrying on such operations as cannot be performed by bullock power; but it lies in saving labour and time and removing the drudgery of the cultivator. Intelligent utilisation of tractor power thus becomes evident.

It should however be realized that use of tractors alone will not materially help in increasing food production. It is the *type of farming* which will affect the ultimate and long-term production. If the vast areas of land being opened up at present are allowed to be cultivated by the cultivators in the manner in which they wish, it is likely that the value of the money spent on the scheme may not be fully realized. It is suggested that in such areas atleast, use of tractors should be made a permanent feature and modern methods of farming suitable to the country, should be practised. This should be done either by the Government itself by opening Tractor Stations in such areas and carrying on improved methods of farming or the farmers owning the lands should be formed into a Cooperative Cultivation Society-if necessary by law-and made to carry on improved type of farming under the direct supervision of experienced and expert staff of Agriculture department.

Existence of small holdings is a great handicap in carrying mechanised farming. But independent India cannot afford to tolerate any factor which is going to limit food production. It is calculated that a single man can handle 100 or more acres in one year. Therefore to make full use of the tractor in India—where average holding consists of less than 5 acres, 20 to 25 such holdings should combine together to form a Cooperative Farm to be run by a Cooperative Cultivation Society. This Society may own the tractor, employ a full time technician, and hire it to other cultivators as well for various operations. The drawback in this is that unless there is full understanding among the members concerned or good and honest leadership, there is likelihood of conflict coming in deciding as to what work should be done, when, how and by whom? This will gradually

go with education and understanding of citizenship rights and responsibilities. Advantage of such society can also be taken for other activities e. g. pooling of implements and good bullocks for hire, stocking and distributing improved seeds, fertilizers, marketing of produce, compost making etc.

In the absence of cooperative farming, use of tractor can be made through what is known as "Custom work". Any enterprising progressive and mechanically skilled cultivator can own the tractor and in the surrounding villages can do the various operations for other cultivators and get remuneration according to work. In the near future when Indian agriculture is going to be modernised—from which there is no escape—this type of enterprise can be a paying one.

In both these cases to give a fillip, Government help will be necessary. Government should take the responsibility of supplying tractors on loan to be recovered in instalments, assure the supply of fuel and lubricating oil and fix the rate of hiring to ensure against exploitation of the peasants. It will also be necessary to construct proper roads so that tractors could be taken from village to village and field to field.

In large holdings such as owned by zamindars and in sugarcane plantations etc. the use of tractors is already being made, and other persons not doing so, should be educated in the benefits of tractor-use.

Another way in which tractor can be used is through contract work. There is quite a large scope for contract work in India as a commercial enterprise. The large response which the Tractor Scheme has received is a full proof to this. A contractor who should, of course, have an engineering bias, is not expected to need any financial support, but will need other assistance like ensured fuel supply etc., particularly under the conditions prevailing at present.

In all the above cases, in order that the enterprise may become a success, certain fundamental prerequisites are essential. In the areas where tractors can most usefully be worked, Government should have centrally situated Tractor Stations where Tractors can be repaired and spare parts made available. Such Tractor Stations should have expert staff who should give advice as regards type of tractor to be purchased, suitable area for its operation, depth of ploughing, types of implements to be used etc. The implements recommended should be also available. It should be posssible for enterprising farmers to get training at such centres in mechanized farming.

Improvement of agriculture in one direction will not help. All-sided attack simultaneously on the various features, necessary for stepping up food production, is essential.

That the main stumbling block in the road to progress in India is lack of education has been well recognised and need not be stressed. Removing illiteracy will therefore be the the first requisite. In addition, the curriculum in agricultural schools should include mechanised farming. Facilities should be made available, preferably at the Government Tractor Stations for free technical training for farmers desiring to have it.

For tractors to become popular and for mechanisation of agriculture to become successful, it is necessary that right

ype of implements and machines are tilised. For this, the Government should pen a number of Research Stations in elected areas, in which research should e carried on to invent implements suitble for the various operations, and for onditions obtaining in those areas. Similarly tractors may also be modified to uit the prevailing conditions.

Factories will have to be opened to nake such type of tractors and implenents available in large numbers. The pening of the tractor-manufacturing factory at Bombay is an encouraging step in this direction.

Only an all out effort at this juncture o bring about improvements in all aspects of agriculture will help increased food production to meet the growing demand of India and save our country from the disgraceful condition of going with a begging bowl at the doorsteps of other nations.

References:—

(1) "*Reclamation of Waste Land-Six Year Plan*"-*Hindustan Times, Aug. 13, 1948.*

(2) "*Rural India*", *August, 1948.*

(3) "*Allahabad Farmer*" XX (3), *May, 1946.*

(4) "*Scientific Monograph*" *No. 9, I. C. A. R. 1934.*

(5) "*Indian News Chronicle,*" *17th Sept. 1948.*

GROW MORE FRUITS

PART II D

MANGO - Aam (Mangifera indica)

By: B. L. Choudhri

(Continued from November, 1948 issue)

MANGO is the king of all fruits. It is grown all over the country and is so cheap and produced in such abundance that even the poorest man gets it. It is a very hardy and profuse bearing tree. It is a tree of the plains but is found to do well upto the elevation of about three thousand feet.

There are two types of mangoes: 1. Table variety, 2. Sucking variety. The sucking variety is the common type found growing wild or propagated by seed. Its juice is thin with threads in the pulp and when ripe cannot be cut into slices. The table variety on the other hand has thick juice and threadless pulp and can be served in small slices. Its skin can also be pealed off with a knife. There are some mangoes which are of intermediate type.

Propagation

Mangoes are raised from seed, grafting and budding. Grafting by approach i.e. inarching is most popular. Grafting is generally done during the rainy season when the heavy showers are over. Propagation by grafting is also done during winter in which case special care for irrigation is required.

Climate

Mango grows fairly well all over India. "The ideal climate", according to Allan, "is a climate with a good monsoon followed by a period of dry clear weather

with but little direct rain till after fruit has set, absence of marked frost and sufficient humidity in the air, the out-come of the neighbourhood of the sea, high mountains, forests and rivers and (or) canal system to prevent the air getting too dry". The fruiting of mango is badly affected by frost and cloudiness at the time of flowering and fruit setting, hence freedom from these is an important consideration.

Soil

Dealing with the soil requirements of mango, Jogiraju records in the Madras Agricultural Department Bulletin No. 24, the effects of various soils on Mango. His experience is that, "The mango grows on almost any kind of soil, provided it is sufficiently deep and well drained. A red loam fairly deep with a substratum of loose gravel is ideal. Here, there is an uninterrupted development of the root system as well as free drainage essential for the length of life and bearing capacity, the peroxide of iron in this class of soils exerts a beneficial influence. It increases the vigour of the tree and sweetens the fruits.

"In sandy soil as met with on the sea coast, the mango grows well but the tree does not live long, and the fruit is inferior. The addition of silt improves conditions favourable for its growth."

"In clay soils, especially of an alluvial nature, the tree puts on heavy foliage and produces little fruit. Rich lands under cultivation with other crops are not recommended for the same reason.

"In shallow soils, the root growth is checked as soon as a hard rock is reached. Unless the land falls steeply water-logging and imperfect aeration in the rainy season ensue, but if the slope is deep there is insufficient moisture in dry weather. From either of these causes growth is arrested, and the plantation is short-lived. The presence of a considerable number of small stones such as are found in the soils at the foot of the hills does not affect growth, provided the soils are otherwise suitable."

Mangoes have been found growing well on sandy loam, on leterite, on medium black soil, on alluvial soil with a certain amount of lime in it. Any deep soil which is not water-logged is suitable for mangoes. Light loam or medium loam soils are preferable. The soil should be thoroughly cultivated and if it be of light type, a liberal dose of Farmyard manure should be given. Green manuring and other methods of soil improvement previously suggested should be employed.

Planting

The grafted varieties are planted at about 30 to 35 ft. apart. The position of the plants is marked by pegs. Then the pits of the size of 3' x 3' x 3' are dug at these spots. Fill these pits with a mixture of soil and manure and allow it to set before planting is taken up.

While planting care should be taken to plant early, medium and late varieties in separate blocks. The late varieties may be blocked in the middle followed by lines of the medium ones and then the early varieties.

Irrigation

Watering of plants should be properly looked after for about three years till the plants get established. Bearing plants should be irrigated at the time they are in bloom and begin to form fruits.

Manuring

Manuring is rarely done to the mangoes by the average Indian gardener. By

lack of this the life of the plants is shortened. They must, therefore, be manured if not every year, at least the year in which they fruit, i. e., mostly alternate years.

"The Agricultural Department, Bombay, recommends 20 lbs. Farmyard manure, 5 lbs. Bonemeal and 10 lbs. wood ash, at the close of the first year, with addition each year of 10 lbs. Farm-yard manure, 1 lb. bonemeal and 2 lbs. wood ash till the total per tree is 100 lbs. Farm-yard manure, 15 lbs. bonemeal and 30 lbs. wood ash". (Allan)

A suitable manuring mixture is made of cow-dung manure, bonemeal, oil-cake and wood-ash. Full grown tree may be given about 5 baskets (one basket = 20 lbs.) of cow-dung manure with one basket of ash, one of bone meal and one of oil-cake.

Farmyard manure is applied in June, July and the oil-cake, bonemeal and ash may be given as a top dressing after the rains, preferably in October, November.

Use of 'Sau' as garden manure in well grown orchard will enable to reduce the dose of Farmyard manure. An important point to remember for getting regular crops is that in no case should the orchard be allowed to lack in nitrogen contents of the soil. At the same time it may be remembered that heavy nitrogenous manure results in more vegetative growth and less fruits.

Pruning

A mango tree does not require much pruning. The tree has the natural tendency to grow into a rounded or vase form. During the first four years, pruning if necessary due to faulty graft, should merely consist of giving a well formed sturdy shape to the plant; besides this, dead and diseased branches should also be cut off.

A tree at times becomes craggy forming long branches and has a tendency to put in vertical growth. Such a tree should be topped at the height of about 8 feet. This will result in the growth of side branches. The leader and all other branches putting up a leggy growth should be treated like this. Other general principles of pruning like that of pruning over-lapping branches, compound crutches etc. as previously explained should be followed Fruit bearing trees should be pruned after the crop is gathered.

Fruiting

Mangoes grown from seed begin to bear in about 8 to 10 years. Whereas the grafted ones give crop in the 4th to 5th year. Grafted plants flower from the very year of planting, but these flowers should be destroyed and crops should not be taken till the fourth and preferably the fifth year. This increases the total life of the plant and also its bearing capacity.

Irregular fruiting of mangoes is a well known fact. It was believed till late that mango has a tendency to regularly bear in alternate years. Observations carried over long years have proved it to be not exactly so. This uncertainty of fruiting is a great handicap in the commercial mango cultivation. It has hence attracted the attention of scientists to find out ways and means to get over it. Sen and Naik are the two Fruit Specialists working on the subject. The summary of their findings is given here:

"It is proved by Naik[1] that good or bad cropping years in mango occur at intermediate intervals and do not confirm to any alledged conception or rhythmic or cyclic production. The cause of scanty fruiting in many varieties according to him is due partly to the genetic make up of the individual and partly to the varietal characteristics, while those for lean years in mangoes may be mainly environmental influences including pest and disease incidence. On the other hand Burn-Pryag and Popens postulate that the problem is a physiological one connected with the nutritional conditions of the tree."

According to Sen,[2] "When in one year the tree produces a good bloom and crop, it produces little or no bloom in the year following. It usually blooms again after an interval of one year, but often enough the interval is found to be longer than a year. Then again a good bloom is no guarantee of a good crop. In some years the bloom is spoiled by untimely rains during the time of flowering, in some others it is damaged by excessive hot winds, insect pests, hale, storms etc. Thus it is only when the bloom is good and the weather is favourable, and there is no disease and the pests, that a good crop of mango can be obtained. The numbers of fruits borne on a tree is determined by (1) the number of blooms which form and (2) the percentage of the blossoms which get and yield fruit."

Mango generally has two or three active phases of growth. The growth is governed by various factors and this in its turn influences the fruit bud formation. Naik and Mohan Rao[3] summarise this as follows:—

"In mangoes, a definite relationship is found to exist between various growth features and blossom bud formation.

"No significant difference is observed between flowered and non-flowered shoots with regard to flower production. The general belief, that shoots that flower in one year are incapable of producing a crop in the succeeding year is therefore, erroneous.

"Mango flowers have been found to be borne largely on the shoots that originate in the first flush of the previous year.

"Although a higher percentage of leaders than laterals bear flowers, the latter shoots because of their great abundance on a tree exert a profound influence in increasing the gross flower crops.

"None of the shoots that carry fruits to maturity seem to bear in the succeeding year, which means that this class of shoots is less efficient than that in which the flowers shed early or in which flowers were not produced in that year.

"An early production of lateral shoots during the first flush, and early cessation of growth during the same flush and complete dormancy in the season immediately preceding the flowering period, seem to be conducive to regular bearing in mangoes.

1. Naik, K. C. "Cropping Behaviour in Mangoes", Madras Agricultural Journal, July 1941.
2. Sen, P. K. "Indian Journal of Horticulture", Volume I, Pages 48-71 and "Indian Farming" 5(9): 408-11, September 1944.
3. Naik K. C. and M. Mohan Rao. "Some factors Governing Fruit Bud Formation in Mangoes", Madras Agricultural Journal, November 1942.

"Heavy flowering is followed by retarded tree activity in the following growing season.

"The available data and the knowledge on the nature of bearing in mangoes indicate that biennial bearing is not an established feature and that the incidence of lean years unregulated intervals is due to factors other than those associated with the natural growth tendencies of the mangoes."

A most important factor governing the growth is the Carbon/Nitrogen in the plant.

Method of getting regular crops of mangoes

Sen, based on the results of experiments conducted by him, has made the following recommendations to achieve regular crops of mangoes:—

1 Proper spacing of plants at 30 to 40 ft. Close planting should be avoided.

2 Provide wind-break on the *loo* (hot wind) side of the orchard.

3 The garden should be cultivated thrice a year,

(a) in the beginning of the rains,

(b) at the close of the monsoons, and

(c) after the winter showers.

4 Stop taking catch crop as soon as the tree begins to fruit. From this stage onwards grow sanhemp as a cover crop in the rains to put down the weeds and later to add organic matter to the orchard by using it as green manure.

5 Add 10 cart loads of farm-yard manure per acre every year in September.

6 If in any year a tree fails to produce sufficient shoots during summer apply five pounds (for six to eight years old trees) to ten pounds (for fifteen to twenty years old trees) ammonium sulphate about three to four weeks before the monsoons set in.

7 Fruiting trees should be irrigated after the fruits have set in.

8 In places of very heavy rainfall flowering can be induced by ringing the branches. Ringing should be done in August-September. Before performing this operation it is advisable to consult the local Agricultural Officer.

9 Keep the orchard clean by regular ploughing and judicious cutting of extra, unwanted, overcrowding, diseased and dry branches.

10 "To control hoppers, sulphur dusting, spraying with fish-oil rosin soap solution or soap-nut decoction is recommended.

(i) Use finely powdered sulphur and dust thoroughly soon after flowering when the nymphs of the insects begin to appear on the developing floral shoots. Give two more dustings at fortnightly intervals. Dusting should be done on the clear day and it should be borne in mind that if the sulphur is washed away by rain within two or three days the dusting should be repeated. It is best to dust sulphur when there is no strong wind.

(ii) Give two rounds of spraying with fish-oil rosin soap at a strength of 1 lb in 10 gallons of water, one at the time when flower buds begin to swell and the other about a fortnight later when flowers open out. Boil about 60 soap-nuts in about a gallon of water-strain, dilute the decoction in 12 to 15 gallons of water and spray like fish-oil rosin soap emultion."

Varieties

There are early, medium and late bearing varieties. It is advantageous to plant a garden that gives more of early and late crops because at these times the market rates are very profitable.

There are many named varieties grown all over India. A Catalogue of any standard nursery gives their descriptions. Krishnabhog, Malda, Sipia, Alphonso, Pairi, Nilam, Langra, Dilpasand, Totapuri, Bigainpally, Fasli, Malgova, Safaida, Gopalbhog, etc. are a few very popular ones.

'Baramasia' is a variety grown as a novelty to get fruits twice in the year. The second crop from this is had in December. The variety is shy bearer.

Catch Crop

For the first two, three years of mango orchard some catch crops like pea, gram etc. can be taken. The catch crop should preferably be legume and not tall growing. Vegetables can also be grown. This will also ensure irrigation to the young plants.

Harvesting

Fruits take about four months to be ready for plucking. The time of ripening varies with the variety and locality. Generally the early ripening varieties ripen by the middle of April and continue upto May. The medium ones ripen from May to middle of June and the late ones are available from June to middle of July.

The fruits of sucking type are plucked when one or two fruits get ripe on the tree and begin to fall down. All fruits are then carefully plucked without damaging them. The system of picking fruits as previously described should be followed. Fruits are then ripened indoor in '*palas*' (Butea frondosa) leaves. They take about a week for ripening. Fruits for ripening can also be kept in deal-wood boxes filled with paddy straw.

The table varieties should be plucked when the fruits show yellowing at the base. Some fruits show yellowing and red tinge when they are half matured. They should not be picked till the red tinge spreads all over which is an indication of their ripening. "When ripe enough to pick the sap which exudes, when the stalk is removed, quickly dries forming a gum. Fruits so gathered do not shrivel during the sweating period." (Allan).

Fruits meant for local market may be kept for ripening in straw. Those fruits that are meant for a distant market may be kept for curing for two days. They then be cleaned, washed in a very weak solution of Bordeaux mixture or potassium permanganate, graded and wrapped in tissue papers. Fruits may be packed in round baskets or in boxes. They are best packed in trays of 20" x 12"x 3" or 24"x 12"x 4" according to the size of the fruits. Each tray should contain one dozen fruits. The trays then be made into packages of five trays or may be individually sent to the consumer. The general hints on packing given previously should be followed.

Beware of these

'Aam banda' (Mistletoe) is very harmful. It rapidly spreads over the whole tree and robs it off its sap. This must be destroyed on sight.

A few insect larvae are at times found to bore in the trunk. Get these pricked. Mango-hoppers, mealy bugs and fruit fly also cause damage. Hopper can be controlled by rosin compound. Mealy bugs by banding the trees from January

to May with a mixture of coal-tar and crude-oil emulsion. The fruit fly is controlled by poisonous bait painted on wooden or tin plates and hung on branches.

A point of interest

Mango budding in Situ is a great improvement over the old practice of purchasing grafts. This system of propagation consists of growing stock plants at the permanent places and budding on them when they are fully established. The obvious-advantages of this are:—

1. Low or no mortality of the plants.

2. Economic, as the plants are not had from outside; hence no expense on railways etc.

3. High vigour in the plants, as the root system gets natural growth from the very beginning.

Method of Mango Budding in Situ

The method is very simple and an average mali with little practice can achieve full success. For propagating plant by this method lay out the garden and fix the situation of the plants. Dig pits 3′x3′x3′ at these places and fill them with soil and manure in the usual way. Sow two stones in each of these pits. When the plants are well established keep the healthy one and discard the other plant. In about two or three years the plants would have developed three to four healthy branches. Select two healthy branches out of these and bud on them. Select buds from the choicest plant. Budding should be like that of budding for orange plants. The cut for inserting the bud should be in the form of inverted 'T'.

At times well developed eyes are not available on the Scion plant. To encourage their growth cut down the branch about one to two feet from the ends. Remove the blades of five to six leaves, leaving their petiole on the branch, below the cut point. This will result in development of the eyes and the petiole will soon fall down leaving the prominent eyes conspicuous enough to be properly removed.

Success in this depends on the attention given to the following points:—

1. Take buds only from two years old branches. Buds from between second and third foot from the tip of the branch give best results.

2. Budding should be done at the right season. This will vary from province to province and can be decided only by experiments. In places where the rainfall is not heavy, rainy season is found to be the best season for mango budding. Better results are obtained if the buds are protected from rain water by cellophane paper bags.

3. The stock plant should have the maximum flow of sap.

4. Keep the budding knife as sharp as a razor.

5. Bud the eye as soon as removed from the mother plant.

6. While removing the bud from the mother plant take care not to damage it. Its base must be sound.

7. After inserting the bud on the stock plant tie it with the budding tale in such a manner that water cannot enter in between the bud and the stem of the stock. The two must be in perfect contact.

8. Before completely cutting of the stockhead, a ring of bark should be removed from the stock plant 4 to 6 inches above the bud. This should be done after a fortnight of budding.

Mango is one of the important fruits of India and is grown widely all over the country, yet the industry is not as good a commercial concern as it should be. It is mainly due to :—

(i) Want of standard varieties of fixed qualities.

(ii) Irregularities in fruiting i. e. existence of off and on years.

(iii) Defective marketing system.

(iv) Want of mango fruit product industries with the result that during the peak season huge amount of fruits are wasted.

It is a recognised fact that India holds monopoly of mango. It is high time that she establishes markets for it in foreign countries. At home the Government and the public should make efforts to educate the growers to get the best out of their mango orchards. To ensure supply of plants of recognised varieties the Government should start nurseries all over the country and find out other ways of eliminating mischievous nursery owners. An all-India Society of Mango growers should be established to safeguard the cause of the industry.

THE REAL GRIEVANCE

By: G. B. Sirdeshpande

VARIOUS Provincial Governments in India are pledged to bring about rural prosperity by means of abolishing Zamindari, scaling down agricultural indebtedness, reducing the rents and extending the period of leases. These by themselves will not improve the productivity of the land—the primary source of rural wealth. The change of ownership to less capable by itself will not work miracles. If the per capita income is Rs. 45/- to-day in rural areas, it may become Rs. 50/- after this process. This ten percent addition will not help materially. What we require is means to increase the productivity of the land, by soil conservation, application of manure, irrigation facilities, mechanical equipment, to do the hardest jobs cheaply and efficiently.

Inefficient Labour

The means to increase the productivity of the land are: the liberal application of labour, capital and brains in the business of production. If these are not made available cheaply to the agriculturist, all other efforts will be simply destructive. Our labour is extremely inefficient. It has no sense of responsibility. Nor is it supplied with instrumental equipment to become efficient comparable with any other progressive country labour in other parts of the world. Our Central Government is thinking of equating him materially with his brother labourer in the Western world. How can rights come without corresponding ability? Inefficiency may not be his inherent defect. There are phrases current in villages: "Whatever a labourer does is destructive"; "For every hired labourer a family member is required to supervise". It is therefore necessary that Government should first devise ways and means to increase the productive capacity of the labour. Otherwise, it would be as the phrase goes "a doll worth a pice receives a decoration worth an anna". A law may postpone the reckoning day, but cannot balance the accounts where more is given than is received.

Lack of Capital

Even a small village having a population of 2000 persons produces in the village agricultural goods worth nearly a lakh. The working capital required to produce this will be at least half of it. Even if we rob the whole village many days after the harvest, it is doubtful whether Rs. 5000/- can be produced in the village. With such poor capital resources how can we expect standardised crops? It is foolish to compare the yields of our land with those of other progressive countries of East and West when our investments in land are hardly comparable with theirs.

Every village must have an Agency on the spot to advance cheap money both for working capital and long range improvement. When each village requires capital resources in lakhs, our Provincial Governments make provision of a few lakhs as Takavi for whole of the Province.

This was the time when every rupee in the country-side should have been mobilised for agricultural improvement. Instead, the Provincial Governments have scared away the capital by imposing irksome conditions on its fruitful employment. In trying to curb the money-lender, they have scared away the capital from its proper use. Unless this state of affairs is improved, our agriculture industry will face a disaster. The peasant feels fettered and caged against rightful expansion of his activities. The Governments may be thinking of supplying the need of capital, but their redtapism is too inert and blind to be of use to the really progressive.

Irrelevant Guidance

As regards the supply of brains—intelligent guidance—there is not much use of it. Our demonstration farms can never be models for our agriculturists. If the advice is followed, our peasant will be hastening his doom. This advice will be useful when it becomes *realistic*. The progress of the agriculturist will be along the line of his own organic growth. He lacks adequate *means*. If they are supplied without botheration, he is satisfied. The country too will be a gainer

PALM GUR IN RAJPUTANA

By: S. V. Kamat
Dy. Palm Gur Adviser to the Govt. of India.

The land:—Like Sind the Province of Rajputana consists mainly of sandy plains, but unlike the former there is no Indus to wet and convert a belt into fertile fields. If the few lakes and some rivulets, that dot the vast tract were extinct then this area would have been an abridged edition of Sahara. The stray monsoons that deign to shed some of their watery contents, permit that soil to grow barley, gram and to some extent wheat. On the southern part that goes to join the hilly regions of Central India more vegetation—hence more population—is visible.

Date palms, the symbol and shelter of desert oases, are scattered all over the province. The species are no longer of the Arab variety (Phoenix Dectalifera) which yield date fruit of high quality. The prevailing palms are called the wild date (Phoenix sylvestris). Fortunately the wild dates are easier for tapping

poses. Their petioe and the outer bark are not so thick nor so tough. They grow all over India, except in N. W. F., Sind and some easternmost districts of the Punjab, where the superior variety has been cultivated.

The people:—History supplies us with ample proof that the onslaught of Muslim hordes was in the beginning effectively repulsed by the tenacious Rajputs. We are also aware how gradually they succumbed to the Moghul Power and splendour, and the synthesis has become so complete and indigenous that it becomes a moot point whether some of the artistic traits were taught by the rulers to the ruled or vice-versa. There was no occasion nor there seemed to be any reason for me to study the social and economic condition of the people when the halo of the Rajputs was a password for bravery and gallantry. But in whatever little wandering I did I saw that the emaciating British Rule has reduced the masses to the lowly, illiterate and beggarly condition as that of other provinces.

Extremes exist in climatic and economic spheres. The innumerable Marwadis that have 'occupied' the finaucial world hail from this province. Most of their millionaires originated from the state of Jaipur, about which we are at present specially concerned. The gorgeous and systematic array of buildings, aesthetic display of architecture, and the beautiful selection of colours for clothing effectively camouflage the stark poverty of the rural folks from the casual glance of an outsider. Stingy Nature, lethargy of the State and age-long orthodoxy have together reduced the villages to a state of want and penury.

The Times:—The Advent of Popular Rule in general and the Jaipur Congress Session in particular bid to herald a revolutionary awakening. The gigantic preparations that are afoot have already attracted thousands of the labourers to build up Gandhinagar; and the tale of experience they will carry to their kinsfolk will itself be an intellectual torchlight to illuminate the superstitious and conservative minds. The witnessing of this 'dream in bamboo and grass' will be fully broadcast in the Sarvodaya Pradarshini, where besides khadi and village industries, similar courts will illustrate other aspects of the constructive programme. The organisers are endeavouring to erect a model village in the Exhibition premises. Novel methods of ameliorating the economic condition of the cultivators will also be featured.

The Point:—One of these features is the demonstration of Palm Gur Manufacture. Besides the show of actual preparation of gur from the palms, pictures and charts will show with facts and figures the process and statistics of this industry. I went three times to ascertain the potentiality of this industry in the Jaipur State and also to select a suitable site for demonstration in the exhibition. My peregrinations in the interior and contact with official and non-official persons have brought forth the above impressions, which are neither authentic nor very instructive. But they and the successful experiment that we were able to carry out during the last two months go to assure that there is vast scope for developing this hitherto unknown industry in the province.

THE MANUFACTURE OF MATCHES AS A COTTAGE INDUSTRY

By: S. K. Kallapur

NO cottage can go without matches. The annual requirements of a family are about half a gross. If it has a member who is given to smoking, at least a gross of match boxes would be required, and the seven lakhs of villages in this country must be sending out over 30 crores of rupees. A very big share of this goes to feed factories situated in cities and their suburbs.

Is it possible to save this huge amount for the villages?

I am of the opinion that at least a portion of the amount can be easily saved. An examination of the working cost would reveal that about 50% of what we pay for the matches goes as a price of the empty match box. Less than the remaining portion of the price goes as the price of the matches. A box contains 40 to 50 match sticks. After the sticks are used up, the box is thrown away even though it is serviceable. The same box can be used three or four times—probably more often. A little side painting with chemicals would be required after it is used thrice or so. Yet we find that this useful material is thrown away.

I have considered the question whether it is possible to bring about an arrangement under which matches in small bundles of 40 can be put up for sale in the shops. The purchaser should be enabled to bring his own empty box, purchase the bundle of sticks and fill it himself. It might become possible to pack the sticks in damp proof paper.

How much valuable wood we are now wasting over the manufacture of match boxes! How much labour is wasted! And all this at the time when we are crying that we are short of soft wood! and what we have is required for the manufacture of plywood, packing cases, paper pulp, and other articles of priority No. 1. The villages would be saving quite a big amount. They would be using their match boxes with greater care than at present. The boxes would be having some value and even in the cities the profession of collecting empty boxes would come into being.

The application of the side paste is a very simple matter. It is a cottage industry in a number of match manufacturing units. The work can be done almost anywhere.

I come to the next question of the manufacture of the match sticks themselves. Their impregnation, the filling of frames, the application of paraffin, the dipping and the filling of the empty boxes are cottage industries even at the present date in a number of match factories, in the southern part of India. The manufacture of splints and veneers for the boxes are alone centralised processes requiring costly machines. Match sticks require soft wood for which as stated above there is a demand from a number of industries.

The match sticks we come across in this country, are manufactured exclusively from soft wood by the peeling process. An experiment was made at Sodepur (near Calcutta) for manufacturing them from bamboo. I do not know if the process is still alive. In some countries they are manufactured from card boards and in Spain they are manufactured from some other substance. There is no reason why we in India should not use an alternative substance to soft wood. There is at present a prejudice against the employment of substances having colours other than white and cross sections other than square. Hence our factories insist on these shapes and colours. The necessary conditions seem to be that the material should catch fire from the igniting substance easily and for this purpose it should readily absorb paraffin. It should grip firmly the dipping solution. It should strike the sides of the match box with the correct force. In a poor country like ours the villagers are not fastidious about colours, shape, etc, if some money can be saved for them.

I am of the opinion that we will be able to come across a number of substances for the manufacture of match sticks in our villages. The ribs of the leaves of some of the trees of the palm species might probably do for the purpose, if bamboos cannot serve it.* Experiments might be tried at any rate. If they would be found useful, even the manufacture of splints can be a cottage industry.* We could have units at the rate of one for every taluka or important group of villages for the manufacture of matches out of the splints. The empty boxes could then be purchased from the villagers for being filled with the sticks. In the alternative, match sticks in small bundles of 40 or 50 could be sold to them for being filled into their empty boxes. If these arrangements could be brought into practice the villagers would be saving about 75% out of what they are now spending for the purchase of match boxes.

*Bamboo is quite fit for the manufacture of sticks with hand on a cottage scale as has been experimented at Gram Kala Mandir, Adarsh Seva Sangha, Pohri, Gwalior. Inners and outers of the match boxes can be made from waste newspapers.—*Editor*

CULTIVATION IN ARCTIC SOIL

By: A. Lozhechka

NEW life is being breathed into the Soviet Arctic. Inspired by the dream of one man, a handful of hardy pioneers is transforming the barren northern tundra into fertile farmland.

About 25 years ago, an Estonian named Johann Eichfeld set himself the goal of bringing farming to the Kola peninsula. A graduate of the Leningrad Agricultural institute, his dream seemed fantastic to many. Scientists had said farming was impossible beyond the Arctic circle (at about 67 degrees N. Lat.) and life itself seemed to bear out their assertions. When, for instance, Russian settlers in Czarist times tried to grow grain or vegetables on the Kola peninsula their barley froze and their potatoes produced no tubers.

Boulders and marshes are all the eye meets on Kola peninsula. This vast area, situated in the northwest of the U.S.S.R. beyond the Arctic circle, was covered by glaciers during the ice age. There summers are short; winds are fierce; frosts strike early.

Eichfeld began by organizing an experimental station at Khibini, at 67 degrees N. Lat.

He cleared a section of land close to Lake Imandra and decided to prove by

ners' Association Production Centre at Gandhinagar, Tirupur, (Tamil Nad). and the A. I. S. A. Khadi Vidyalaya at Sevagram, Wardha; T. R. RAJAN, (Assistant Instructor), an experienced weaver from Chennamangalam, (Cochin State); K. VISALAKSHI and K. JAYALAKSHMI, both undergoing training in weaving at the Sadan Khadi Vidyalaya.

Work Shop-M. JAYARAMAN, an experienced Carpenter-cum-Mechanic, trained in the T. V. S. Work Shop, Madras, and the A. I. S. A. Khadi Vidyalaya Saramjam (Work Shop) at Sevagram, Wardha.

Basic Education—K. RADHAKRISHNA MENON, M. A., Head Master, Sadan Basic Gurukul, trained in Basic Education at the Hindustani Talimi Sangh, Sevagram, Wardha; K. SAROJINI, First Assistant, trained in Basic Education; K. KUNHAMBU, Assistant, an experienced Khadi worker and Higher Elementary trained teacher; RUGMINI, Assistant, trained in the Kerala Kasturba Training Camp at Kurukanchery, Trichur; C. KAMALAM, Assistant.

Literacy Work—I. P. ANDAVAN.

Hindustani—SEVANANDA.

None of the above workers is salaried, all are working on a maintenance basis.

Khadi

Right from the start spinning classes were being conducted for batches of 12 to 15 girls, each class extending to a period of about two months. As a rule spinning was, and is still, being done only with self-made slivers. Today there are over 150 spinners in the village, where there was none before. For those spinners who could not purchase the Charkhas and carding implements outright, we used to supply these things on repayable instalment basis, realising the cost from their weekly yarn production.

In the month of May, 1948, a short course in spinning was conducted for 40 Elementary school teachers, in two batches.

Four looms have all the while been working to convert the locally produced yarn into cloth. Instructions in weaving were being given informally, and a regular Khadi Vidyalaya was started in March, 1948. Ten students, including six girls are now being trained in the Vidyalaya.

A Khadi Bhandar has also been organised for the sale of Khadi and spinning accessories.

Up till now 2,000 hanks of yarn worth Rs. 3,500 have been produced in the village, and Khadi worth Rs. 3,000 has been sold to the spinners and villagers. We have produced in the Sadan nearly 1,500 square yards of Khadi cloth.

In response to the enthusiasm evident among the neighbouring villages we intend to take up three such villages into the scope of our Khadi work. It is hoped that about 100 spinners and 8 weavers from each village could be got ready in a year's time. This additional work requires new organisers apart from the Sadan workers, for each village. In all the villages it is hoped that facilities like sheds and other essential arrangements will be provided by the villagers themselves.

It is proposed that the main Khadi Vidyalaya in the Sadan should have a good Library and a well equipped Museum. Another building has also to be built to provide adequate space for the weaving section.

Basic Education

Since November 1947 we have been conducting a Basic Gurukul. The Gurukul is situated in a cocoanut grove at a distance of more than one mile from Sadan. The place enjoys immense scenic beauty, and is near the Bharatapuzha River, and a mile to the west of the Mankarai Railway Station.

The inmates of the Gurukul are mostly destitutes, children orphaned during the cholera epidemic of 1943.

At present there are 31 resident and 7 non-resident students. There is only one 'kacha' thatched shed which accommodates the Gurukul. One 'pakka' building is almost completed, which serves as kitchen and hostel.

The Gurukul as it is, is ill-equipped. More buildings for housing the school and hostel, library and museum and other essential school equipments are urgent necessities.

Village Industries

We have not been able to make much headway in this direction. Some experiments have been made in Bee-keeping. A small workshop has been opened and spinning accessories are being made.

The workshop offers great scope for development, particularly in the direction of making spinning and weaving accessories and agricultural implements.

Arrangements are in progress to start a three years' course in Carpentry and Black-smithy for about a dozen children. Adequate building and other initial equipments have to be provided. Two full time paid instructors—one carpenter and one black-smith—will have to be employed. The trainees will have to be given a nominal stipend for a period of about a year.

Oil extraction, gur-making and bee-keeping are the other village industries which offer great scope for development. We intend to take up these also immediately.

Hindustani

Regular Hindustani classes are being conducted, coaching students for all the primary examinations of the Dakshina Bharat Hindustani Prachar Sabha.

Over 100 students have passed the Prathamic, Madhyama, and Rashtra Bhasha examinations. At present there are 10 students in the Prathamic, 10 in the Madhyama and one student in the Rashtra Bhasha classes.

Though some of the Hindustani knowing workers of the Sadan are conducting the above classes, the need for a separate Hindustani Pandit has now become imperative. A good Hindustani library is also an urgent necessity.

Literacy Work

Literacy classes have been conducted from the beginning of the Sadan activities especially for Harijans. As a result of these classes lively interest has been created among the Harijans for studying their mother tongue and gaining general knowledge.

We intend to intensify this work by conducting more classes at different centres, which requires additional teachers other than the Sadan workers.

Harijan Work

Harijan uplift forms an important item of our activity. The literacy classes are largely attended by them, and they form the majority of patients who used to attend our free dispensary.

Two Harijans have been trained in weaving at our Centre, and two students of the Khadi Vidyalaya are Harijans. We have taken more than half a dozen Harijan children in our Basic Gurukul giving free lodging.

We feel we have been able to create a spirit of toleration in the minds of the caste Hindus, and a spirit of self-reliance and individual rights in the minds of the Harijans. Roads, lanes and temples once forbidden to them are now being freely used by the Harijans.

Disputes among themselves, and between them and caste Hindus are peacefully and effectively settled by our intervention. These otherwise would have necessitated the parties resorting to law courts.

The Harijans (Pariahs) of the surrounding colonies are carrying on a progressively losing business in their traditional handicraft, viz., the making of mats and baskets out of bamboo. We are making arrangements to form a co-operative Society to handle the production and sale of these articles.

In response to instructions from the Hon'ble Premier of Madras a scheme for developing 12 Harijan (Pariah) colonies in the neighbourhood is being prepared, and will soon be submitted to the Premier.

Model Farms

We intend to start a Model Farm in order to demonstrate to the Villagers the advantages of improved methods of agriculture. Attached to this we also intend to have a centre for effiicent live-stock management, as the general condition of the live-stock here, as elsewhere, is far from satisfactory.

experimentation, that the poor Khibini soils could be made fertile. He determined to discover under what conditions grains and vegetables could be grown beyond the Arctic circle. He planted potatoes, turnips, beets, spinach, radishes and cabbage, fertilizing them with manure that had been dropped by herds of cattle driven through that district during World War 1.

The First Blow Falls

An assistant soon arrived—a middle aged woman agronomist named Maria Khrennikova. Together they carefully tended every plant.

But before long the first blow fell. An early morning summer frost killed their crops. The labour of the two pioneers seemed lost. But when the two scientists closely examined the plants they found some had managed to survive.

"Couldn't they become the forebears of the new, hardy frost-resisting varieties?" Eichfeld wondered.

But as the few surviving plants developed, strange things began to happen. Some varieties of potatoes produced luxuriant tops but no tubers: radishes, beets and cabbages flowered but did not yield any leaves. This was due to the long Arctic day. True, the endless day had its positive aspects as well the abundance of sunshine compensated for the lack of heat. And some varieties of oats which did not mature in Leningrad region began to yield in Khibini.

Eichfeld and Khrennikova decided then to select the best early-ripening and frost-resistant varieties which could survive the Arctic day.

The pioneers planted thousands of different varieties from different corners of the globe on their experimental plots. Gradually, by selection, they evolved varieties that could withstand early frost and go through the entire cycle of plant development in the course of the short Arctic summer, varieties that were not harmed by the long Arctic day.

But that was only the first lap on a hard trail. The grains and vegetables they grew thrived only on fertilized soils. And on Kola peninsula organic fertilizer was a rarity.

At this juncture Eichfeld thought of the Khibini marshlands. What about drying them?

Eichfeld and a workman named Mikhail Onokhin uprooted trees, cleared shrubs and dug drainage ditches. The reclaimed area was then divided into three plots. One was left without any plant food. On the second, mineral fertilizers were used. On the third, organic fertilizers were applied.

The section on which mineral fertilizers were used produced a splendid crop. This opened up excellent prospects for farming on the reclaimed marshy tundra of the Kola peninsula. The only difficulty was that of bringing in mineral fertilizers from afar.

Within several years a little settlement grew up on the banks of Lake Imandra. Several pioneers who set out to introduce farming in the far north toiled there throughout the summer and the long Arctic winter.

At the end of the 1920's huge deposits of apatite (a valuable mineral that can be used for the production of phosphate fertilizers), were discovered in the Khibini mountains. Johann Eichfeld at once realized that the Khibini apatite plateau solid ground beneath his cherished dream. Enthusiastically he took part in the first

surveys for apatite, the white stone of fertility. He made many experiments to establish the influence of apatite on local soils, and sent samples to Leningrad and Moscow for detailed study.

The tapping of apatite resources was soon launched on a large scale on the initiative of Sergei Kirov, eminent leader of the Bolshevik party and noted Soviet statesman. A mine was sunk and an entire city was built on the bank of Lake Vudyavr. This town was later named after Kirov.

Problem Of Supplies

As the population of Kirovsk grew the problem of supplies, of providing milk, potatoes and other vegetables came to the fore. It was then that Eichfeld had the chance to apply the results of years of experimentation and research to practical use. He proposed that the world's northernmost large-scale agricultural enterprise be set up near Khibini. It took the concrete shape of a truck and daily farm—"Industria" administrated by the apatite trust.

In 1931, the farm planted its first two hectares (about three acres). Now the sown area is about 3,000 acres. The farm supplies potatoes, beets, cabbage, cucumbers and tomatoes to the inhabitants of Kirovsk.

Until 1932 agronomists at the Arctic the seeds he obtained and then from experimental station evolved new varieties by selection. Subsequently, they set out to develop new sorts by crossing. Noil Veselovsky, one of Eichfeld's assistants crossed a frost-resistant, wild growing, South American potato with a cultivated variety that yields good tuber. Veselovsky planted several thousand plants. He chose 200 which possessed the greatest resistance to frost and yet produced high yields. This is how he evolved new varieties of the northern potato such as "Imandra," "Imandra's Sister" and others.

—Bombay Chronicle

RURAL DEVELOPMENT REPORT

GANDHI SEVA SADAN

Perur, South Malabar

Gandhi Seva Sadan is a village reconstruction centre in Perur, a village in Walluvanad Taluk, South Malabar. Started in November, 1945, the institution is working as a TRUST since March, 1948.

During the two and a half years of its useful life, the Sadan has been graced by visits and favourable notice from distinguished personages, among whom can be mentioned the Ex-Congress President, Acharya Kripalani, the Hon'ble Premier, Sri. O. P. Ramaswami Reddiar, Their Excellencies Sir Archibald Nye and Lady Nye, and Sri. V. P. Menon, Secretary, State Ministry, Government of India.

The Institution is being financed by private donations which up to date amount to more than Rs. 20,000 in cash, and about Rs. 7,000 in land, building and other materials.

There are at present 13 workers in the Institution, as detailed below:—

General Organisation— K. KUMARAN, (Secretary of the Sadan), trained in the All India Village Industries Association at Honavar, (N. Kanara) and the Rural Workers' Training College at Pohri. (Gwalior State).

Khadi Vidyalaya—K. VENUGOPALAN, (Instructor), trained in the All India Spin-

Study Classes

Sundays are being devoted mainly to intellectual pursuits. Study classes are being conducted on social problems, with special reference to the Gandhian way of life. Religious classes are also being conducted, competent religious authorities giving talks on their respective religions. Our ultimate aim is to convert these Sunday meetings into a village assembly where all subjects connected with the daily life of the villagers will be discussed.

Free Dispensary

We were conducting a free dispensary from the beginning of our activities. This has enabled us to influence the Malabar District Board in opening a free subsidised rural dispensary in our village. A local doctor, Capt. P. M. Nair, is in charge of the dispensary.

Self-Sufficiency

It is not our desire to depend on public charity forever. We aim at self-sufficiency and that too at an early date. Our workshop, industries section, model farm, etc., offer good scope for self-sufficiency.

We are also organising a dramatic society from among the students of the Basic Gurukul and our workers, which will provide the villagers with good entertainment, and at the same time enable us to collect considerable funds through periodical performances.

PERUR, —K. KUMARAN,
1st August, 1948. *Secretary*

BUY

COTTAGE INDUSTRY GOODS

Produced by Producers' Cooperative Societies

ARE

MODERATELY PRICED, STRONGER AND LAST LONGER

Send Enquiries for Cap linings, Chappals, Leathers, Hand and Powerloom Cloth, Arts & Crafts Products etc. to:

THE PROVINCIAL INDUSTRIAL COOPERATIVE ASSOCIATION LIMITED,

9, BAKE HOUSE LANE, FORT,

Grams: "SAHYOG" BOMBAY. Phone: 34519

Our Publications on Industrial Cooperatives are:—

*Organisation of Industrial Cooperatives by J. B. Tayler	Price Rs. 1/8/-
*Industrial Cooperation by J. B. Tayler	Price Re. 1/-
*Industrial Cooperation by R. M. Talpade	Price Re. -/12/-

"The Rural India", Volume XI, No. 1 to 11

JANUARY, 1948 to DECEMBER, 1948

INDEX

ARTICLES

Abolition of Malguzari—A Radical or Retrograde step —*Dr. V. G. Vaidya & R. S. Shiwalkar* 293

Abolition of the Zamindari System in India —*Sharad Chandra Merh* 258

Agrarian Reforms in India —*D. Krishna Iyengar* 281

Agricultural Economic Conditions of Sind —*Prof. K. N. Vaswani* 152

Agricultural Economics and Agricultural Policy in India— *R. S. Shiwalkar* 255

Agricultural Proletariat —*J. S. Chaube* 172

Agriculture in Britain 305

American Cottons in India, Their Introduction and Development —*Muhammad Afzal* 111

Can Compost Manure Produce Enough Food for Our Country? —*Dr. C. N. Acharya* 284

Compost Making in Rural Areas —*G. L. Patil* 162

Congress and Constructive Programme —*K. G. Mashruwala* 241

Constitution of "The Order of Economic Democracy" 239

Cooperation - Handy Tool of Democracy —*Ralph Richard Keithahn* 9

Cooperation in India —*Ralph Richard Keithahn* 89

Cooperation in the U.S.A. and Elsewhere —*Ralph Richard Keithahn* 56

Cooperative Movement —*Hon'ble B. G. Kher* 165

Cottage Industries in United Provinces —*Mahesh Chand* 321

Cultivation in Arctic Soil —*B. Lozhechka* 421

Date-Palm Centre-Hosur —*Kaka Kamat* 303

Demographic and Agricultural Statistics of Sind —*Prof. K. N. Vaswani* 58

Development of Compost Work in India —*Dr. C. N. Acharya* 62

East African Groundnuts Scheme, the —*P. J. A. Bathurst* 362

Economics of Mechanisation of Agriculture —*D. Krishna Iyengar* 371

Enlightened Agriculturist, the —*B. K. Shri Ranga Raja Acharya* 180

Farewell to the Trainees —*G. K. Puranik* 197

Financing of Village Industries-The Marketing of their output and planned production —*S. K. Kallapur* 13

Fisherfolk and Fishery Development, the —*Dr. S. T. Moses* 65

Food Crisis and Soil Fertility - A Case for Fertilisers —*K. G. Tejwani* 202

Food Problems of Asia —*George Martin* 123

Functions of Village Panchayats in an Independent India —*Raj Rajendra Brig. M. N. Shitole* 158

Future of Food and Agriculture, the —*D. Krishna Iyengar* 49

Future of the Congress, the —*Dr. B. Pattabhi Sitaramayya* 45

Gandhi Jayanthi at Gandhi Gram —*Ralph Richard Keithahn* 354

Gandhi National Memorial Fund, the —*J. C. Kumarappa* 253

Grading of Non-Descript Cattle —*J. N. Mankar* 93

Grow More Fruits —*B. L. Choudhri* 22, 96, 141, 184, 296, 339, 365, 410

Growth of Landless Class in U. P.
—*Shridhar Misra* 333
How to Make Indian Dominion Self-Sufficient in Food Production
—*Mukhtar Singh Choudhury* 125
Improvement of Dairy Industry
—*Zal R. Kothawala* 381
India is Rural
—*R. K. Singh Paroda* 200 & 329
Kanara Forests and their Future
—*H. T. Koppikar* 300
Live-Stock Wealth of Sind-Its Statistics, Distribution and Economic Significance
—*Prof. K. N. Vaswani* 18
Mahatma Gandhi-A Homage (Poem)
—*P. C. Dutta* 91
Malaria Epidemic in Rural Areas, Its Virulence, Causes and Eradication
—*Dr. H. I. Raisinghani* 147
Manufacture of Boiled Oil on Village lines
—*M. S. Raut* 176
Manufacture of Matches as a cottage Industry, The —*S. K. Kallapur* 420
Market Deductions in Punjab
—*L. R. Dua* 288
Mechanisation of Agriculture in India
—*D. G. Dakshindas* 407
Mechanisation of Agriculture to Date
—M. M. *Jamkhindikar* 265
Miserable Plight of the Weavers of Aurangabad (Gaya)
—*Prof. L. P. Sinha* 104
Multifold Benefits of the Damodar Valley Project —*S. K. Guha* 164
Multi Purpose Cooperative Societies & Their Utility 76
New Approach to Farming
—*George Gretton* 94
New Order of Economic Democracy, the
—*D. Krishna Iyengar* 136
New Outlook on Agriculture in India, A
—*K. M. Desai* 403
No More Linguistic Provinces
—*Manu Subedar* 278
Note on "Agri-Silvi" System, A
—*N. S. Kaikini* 268
Note on Rural Reconstruction through Cooperative Labour in Coorg, A 342
Oilmen's Cooperative Society of the Bombay Province—*S.K. Kallapur* 270
Our Fishing Methods and Their Improvement —*Dr. S. T. Moses* 226
Our Present Day Problems
—*R. B. Sir T. S. Venkatraman* 161
Palm Gur in Rajputana
—*S. V. Kamat* 418
Paucity Amidst Plenty
—*K. M. Desai* 379
Planning of Land Use in India
—*H. C. Agarwala* 317
Possibilities of the Cooperative Movement 308
Problems in Indian Agriculture
—*H. C. Agarwala* 352
Proposals of the Economic Programme Committee appointed by A. I. C. C. 73
Prospectus of the Rural Workers' Training Institute, Pohri (Gwalior) 79
Provincial Finances
—*Prof. L. P. Sinha* 398
Poverty of The Indian Peasants and its cure —*D. Krishna Iyengar* 21
Raising the Standard of Living in Villages —M. S. *Swaminathan* 2
Real Grievance, The
—*G. B. Sirdeshpande* 4
Rejuvenate Indigenous Systems of Medicine —*T. V. Subrahmanyam*
Rural Development—*J.C. Kumarappa*
Rural Education and Our Food Problem —*Dr. K. N. Kini* 2
Rural Finance —*Mohan Merchant*
Rural Life in England—*T.K. Mookerji*
"Sarvodaya" through Multi-purpose Cooperative Societies
—*K. G. Mashruwala*
Scheme for Cooperative Farming in Tractor Ploughed Area in District Jhansi (U. P.) —*Israrun Nabi*

THE RURAL INDIA

Vol. XII, No. 1] JANUARY, 1949 [Whole No. 119

"Salvation of India lies in Cottages"
—*Mahatma Gandhi.*

ALL-INDIA FOOD PRODUCTION CONFERENCE

WE wish to draw the attention of our readers to the article under the caption 'Turning Food Deficit Areas Into Surplus', appeared in the December 1948 issue of 'The Rural India'. The article contains comparative statements of the progress in 'Food Production' achieved by the Adarsh Seva Sangha at one of its rural development centres in Pohri (Madhya Bharat). In a period of 9 years, covered by this experiment, the production of food commodities in this unit of 7 villages increased from 5356 mds. to 12142 mds. registering an overall increased production of 6786 mds. or 126%. The area under 'Production Drive' consists of 7 small villages having a total population of 1162. This was a food deficit area to the extent of 32% in the year 1938-39. It is a surplus area to the tune of 20% over and above its food requirements for local consumption in the year 1947-48.

The experiment has the merit of self-sufficiency and decentralization in production. A public body like the Sangha had not the advantage of large-scale financial equipment to be invested in the project. There were neither the advantages of other facilities usually associated with land improvement, such as reforms in land tenure, large-scale facilities for irrigation, supply of fertilisers, improved seeds, and/or even sufficient working staff for detailed working and guidance. All that the Sangha attempted to do in working out the experiment was to make full use of the available human and natural resources of the area under the guidance of the Unit Panchayat and on the basis of mutual co-operation of the people.

What largely contributed to the happy results of the experiment are: confidence of the people in the *bona fides* of the Sangha, active co-operation of the villagers, regular and satisfactory working of the Unit Panchayat, definite economic objective before the people, keeping of regular and systematic records of agricultural and dairy products of every family in the Unit, and stimulating individual and co-operative enterprise for increased production through vigorous propaganda and public education. These measures were further supplemented by an active incentive provided to the people of the locality by the local Jagir administration in granting concession of one anna in a rupee in revenue assessment by way of showing their appreciation for the good work done by the people.

Experience has shown that if there is mutual trust between the workers and the village people, if the people really understand and appreciate the work and feel enthusiastic about it and if they could be organised on the basis of self-help and co-operative effort, they can immensely improve their condition and easily double and treble their income

and production from the land. This is all possible with the help of available local resources which are being wasted for want of proper organisation, attention and interest. It will save a lot of public money and wastage of human effort and will also produce results atonce satisfactory and permanent.

As per agricultural census taken by the Sangha in the year 1941, the population of this area of Pohri Tehsil comprising of 220 villages was 49,295 and the production of food commodities was 1,94,986 mds. On the basis of 16 oz. ration per head of population, the area was short of food-supply to the extent of 12%. Encouraged by the results obtained at Deori Centre referred to earlier in this connection, the Sangha has now extended the scope of its experiment to the whole of this area of 220 villages. With a view to ascertain the latest food position of the area, a fresh agricultural census is being taken and a Tehsil-wide 'Food Production Drive' is being launched. A working staff of 55 Food Production Workers, 3 Inspectors, one Director for Food Production and an elaborate staff for statistical work is being engaged.

Each worker is to take charge of 4 villages on an average. His business is to fix up production potential of every piece of land under cultivation, maintain records of production from the land, and see to it that low yielding capacity of the land gives place to increased production from year to year till it reaches the target figure. He is also to see that the causes responsible for diminished production are gradually eliminated and conditions and facilities which may bring about increased production are created. His success will be judged by his producing 75% results in the standardised production fixed for the area under his charge. His efforts at increased production will be reinforced by those of the Inspectors and the Director. On the basis of our past experience at Deori Centre, where the average yearly increase in agricultural production reached a high water-mark of 14%, the Sangha aims at achieving 10% annual increased production in the area now taken up for experimentation.

Fixing production-potential of the lands under cultivation, making use of the resources available in the locality for improvement, keeping detailed records of production, reviewing the results obtained at the end of the year and educating the people on the basis of these results for fresh efforts is in short the essence of the experiment. Conditions of extreme food scarcity obtaining in the country make it imperative that the production of food should be taken up on an emergency basis and that there should be a net work of such experiments launched by the Governments in all parts of the country. Food is a problem that does not brook any delay and on the satisfactory solution of it rests the good name of our national administration.

The food problem has thrown a challenge to the genius and capacity of our constructive workers, officers and employees of the Departments of Food, Agriculture, Cooperation and Rural Reconstruction, on whom, more than on anybody else, lies the responsibility of working out a satisfactory solution of the vexed problem. We, at least, are not in the know of a place in this country, where planned and large-scale efforts are made either by the Government or the public to avert the food calamity. That

shows the height of our inaction and helplessness in the face of dreadful consequences of chronic starvation and death facing the country.

Government alone cannot achieve much in this stupendous undertaking unless it is backed by the armies of constructive workers and the officers of nation-building departments who should take up the task with the missionary spirit. It is not the Government alone that is on its trial, but the patriotism of every one of us living on the soil of this country. That is a front which will have to be fought by the united efforts of the Government and the people.

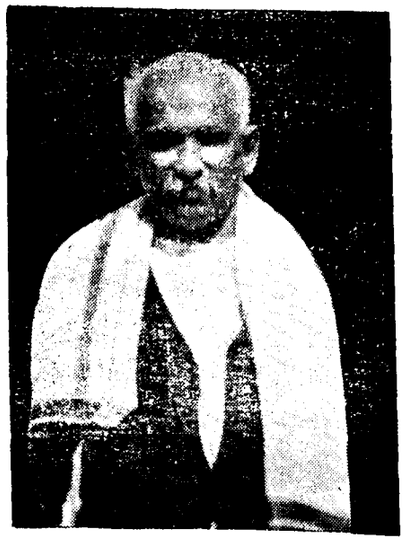
A democratic administration has of necessity to depend on popular support for the success of its plans and policies. If 'Food Production Plan' is to succeed it must evoke popular enthusiasm. One of the reasons of the failure of 'Grow More Food Campaign' in the past is the fact that nobody besides a few Government officials ever bothered what the campaign is like. Except occasional paper propaganda, the public including the best of us have hardly any idea as to how the 'Campaign' is conducted and what tangible results have been produced. In the course of our all-India study tours, we could not find a place where we could have seen visible demonstration of this campaign. And no Government official in any Province ever hinted to us that the 'Campaign' was being conducted in his area and that we might go and have a look at it. That is not the way, Government campaign should be conducted.

Not only for the success of a campaign or movement, but also in the interest of public education, the Government has a duty to educate a citizen in the matter like 'Food Production' which vitally concerns him. The National Government cannot afford to neglect a citizen in what is being done for his benefit and cannot achieve much success in its undertakings without his active cooperation. In future if measures of this nature are to succeed, they must of necessity be broad-based on popular knowledge and awakened self-interest of the people.

In order to create public interest in the campaign of 'Food Production' and also to provide an opportunity for coming together, meeting, making personal observations, and exchanging notes with the vast fraternity of workers—official and non-official—interested in the cause of 'Food Production', the Adarsha Seva Sangha has decided to call 'An All-India Food Production Conference' at Pohri, Madhya Bharat, in the third week of April 1949. The Food and Agriculture Minister for the Government of India, Hon. Shri Jairamdas Doulatram, has very kindly consented to preside Important national leaders are expected to participate in the deliberations of the Conference.

It is earnestly hoped, Central, Provincial, and Union Governments, constructive workers and public, in general, who all realize the necessity of encouraging measures for 'Food Production' will lend their support to the 'Campaign' by attending the forthcoming conference in large numbers. The Sangha would welcome helpful suggestions from all quarters to make the Conference a great success. All such suggestions may, please, be addressed to the Secretary, Adarsha Seva Sangha, Pohri, Madhya Bharat.

CONGRESS PRESIDENT ON NATION-BUILDING



Dr B. Pattabhi Sitaramayya
President of the Indian National Congress

PROFOUND scholar and prolific writer that our President of the year Dr. B. Pattabhi Sitaramayya is, his Presidential Address at the 55th session of the Indian National Congress held at Jaipur is a comprehensive survey of contemporary political history of India. The address, we have no doubt, will rank among the masterly and long addresses delivered in the annals of the Congress. In rhetoric, pleasant simile and sarcasm, analytical review of the political situation, mastery of presentation and alluring flow of the language, Dr. Pattabhi's address will rank among the best ones delivered from the Congress Presidential chair.

The address conforms to the changed political circumstances of the country and devotes a considerable part of it to the problems of national reconstruction which are pressing for immediate solution. Dr. Pattabhi very correctly puts his finger on the weakest spot in our national organisation when he points out, that the 'Village'—the life-spring of our national foundation—lies dried up and unattended by the life-giving influences of the six nation-building departments of the Government. Quite unlike revenue collecting departments, whose organisation penetrates to the remotest village in the land, the nation-building or revenue spending departments of Agriculture, Cottage Industries, Cooperation, Education, Health and Veterinary have no organisation worth the name to serve the village or the units of villages. Poor and small-scale as the organisations of these departments are, they stagnate or come to dead halt at Tehsil or Taluka head-quarters and do not permeate to the village end.

National reconstruction is not a possibility unless the village is adequately served by the life-giving forces of these departments. Dr. Pattabhi pleads for the establishment of well-equipped centres of development in every village unit of India. It now remains for the National Government to supply the missing link for the rehabilitation of village life. We have the pleasure to publish the relevant portion of the address for the benefit of our readers.—*Editor*

Rural Reconstruction

Our constitution is being hammered out. Let us ardently hope that under it, the villages of India, which form the centre and starting point of Indian Nationalism, will be restored to their pristine position and once more play a dominant part in the reconstruction of national life. We had been piously hoping that our constitution would strike a new path

and we rejoice to think that it has conceded the village its high position in the economy of the nation.

That alone will enable us to see that the constitution, should be not like the habiliments of a person which have to be changed with variations in his growth and bulk, but rather be like the bark of a tree which grows with the girth of the tree. This would be possible only when the constitution works out the genius of the nation through its several organs. Village reconstruction and craft life are the real keynote of such renovation.

While urban labour has been vocal and even vociferous, labour relating to agriculture and village industries has not so far received the measure of healthy attention it deserves. Such self-assertions as agricultural labour has off and on displayed, have been not merely spasmodic but even erratic and only indicate the orderly regulation which it demands at the hands of the nation.

Our misfortune in the past has been that while the three millions of industrial labourers had begun to secure adequate measure of study and attention, even during the days of the British, rural labour involving many more millions was wholly neglected by them, for they did not stand to gain aught for their country through its organization on up-to-date principles of modern life and society. Even the so-called Kisan Sabhas are peopled by proprietors of land, not the landless cultivators.

Revenue Earning—Nation Building

The fact is that during the past hundred years the organization of the Government Departments under the British had paid all attention to the efficiency of revenue earning departments which acted as its steel frame, duly supported by the police and the magistracy, resulting in considerable neglect of the revenue spending or nation-building departments, which cover the socio-economic services dealing with rural India—such as public health, agriculture, veterinary, education, industries and co-operative departments. These six departments have received scant attention not merely at the hands of the Central and Provincial Governments, but also of the political organizations of the day which gave high priority to problems of political emancipation and of the attainment of full political freedom.

With the birth of new India on August 15, 1947, and the dawn of political freedom, emphasis has shifted to the socio-economic development of the country. It is not as if the rural economy today is much the same as it was thirty years ago. What little of change there is, is due rather to time force than spirit force. The two world wars have so rudely disturbed rural economy that the outstanding problem today is deficiency of food which has naturally become worse with increase in population and the separation of Burma from India.

Model Villages

Several Governments, voluntary organizations and private institutions have organized during the past 30 years suitable model rural reconstruction schemes throughout India which consisted in making 'model villages'. Most of the private organizations were 'one man shows' and died with the enthusiast who started the scheme, and in the case of Government schemes like Brayne's in the Punjab, they failed because they superimposed modern ideas on the villager, and the villager never felt these are for his good or are of his making.

'Model villages' were made by Government officers who held 'the big stick,' and these collapsed soon after the enthusiastic officers' transfer; nor could they be copied elsewhere, as the men, money and material put into 'models' are not available for other villages. Albeit, the need for improving rural India has been recognized all over the country, and socio-economic surveys and careful plans and reports based thereon are available which deal with all aspects of village life as well as its special needs.

The twenty-six volumes of the National Planning Committee sponsored by the Congress, vouch for the former while the four volumes of the Bhore Committee Report on Public Health and Sargent Report on Education deal with health and education respectively. Several other valuable reports on agriculture, industries, marketing and so on are available. These are all awaiting implementation, and some of them are being implemented piecemeal in various parts of the country.

Evolution Of Govt. Machinery

A brief description of the evolution of Government Departments during the past 100 years will be helpful at this stage. The revenue taking departments were the first to be organized aided by the police and the judiciary. The country was divided into provinces, districts and tahsils. Each tahsil formed the revenue unit under a Tahsildar. The average taluk had 100-200 villages with a population of 100 to 200,000 persons and an area of about 100 to 200 square miles. There were 10-20 taluks in a district with an average district population of 2 millions. Even for revenue purposes the tahsil was found to be too big for a Tahsildar and so it was divided into about 5-10 firkas each in charge of a Revenue Inspector.

Each village had a village headman or chowkidar, who collected the revenue and so its collection was well organized from the village upwards. But the villager was not interested in the efficiency of the revenue collecting departments and soon began to realize that the Government was not interested in his needs which are connected with the six development departments.

These departments grew up as noted from 1919 with directors for the provinces, district and taluk officers for districts and tahsils. They, however ceased to exist below the taluk level, with the Health Inspector, Agricultural Demonstrator, Educational Inspector, Veterinary Officer, Co-operative Inspector and Industrial Supervisor. The Directors of these departments passed on their ideas in the shape of circulars to the District Officers who in turn passed them on to the taluk officers and there the circulars stagnated,

The strongest link in the chain should have been the last link from the taluk to the village, but this became the weakest link.

The taluk officer had 200 villages spread over a large area with inadequate transport facilities and communications and took three years to finish his range devoting a day for each village, and at the end of this period he was transferred invariably, for administrative reasons, only for his successor to start his fresh contacts once again. He had no more powers than to give 'talks' to the villagers and when at the end of any of these talks the villager was asked if he had any doubt he invariably asked for a 'drinking water well.'

The officers realizing that all was not well that ended in the want of a water well, quit the village offering to communicate their request to the authorities concerned, a cycle is completed and the same cycle duly recurs.

Largeness of jurisdiction was the chief evil of these six departments. The second is their inco-ordination. These six departments which represented the six needs of the villager, affect to serve the villager without any idea of the departmental activities. Thus, the Health Inspector told the villager that manure heaps are deleterious to their health, as the manures breed flies and flies convey disease germs from filth to food.

When the Agricultural Demonstrator next visited the village, he told them that manure is valuable to their lands and must be carefully preserved, and the same Government paid both officers to give them these talks which the poor villager was unable to put together. If both were co-ordinated, they would have told the villager to do composting of manures which does away with flies, as well as preserves their nutrient qualities.

Spencer Hatch, an American missionary who had done several years' rural work in Travancore, wrote in his book *Up From Poverty*, that the six square yards of the Indian villagers' hut are looked after by six different departments at six different times of the year; one vaccinated his children, the other inoculated his cattle, a third offered to supply iron ploughs, manures and seeds etc., without the villagers' primary needs of a drinking water well, village road and village school being satisfied.

Reorganization Needed

A solution is needed to reorganize all the development departments, whose two chief evils are the large jurisdiction and want of co-ordination of the taluk officers. These six departments are fairly well organized at the top, at the Central Government and Provincial Government levels, and have three sections, Administration, Research and Teaching. These officers at the Centre and at the Provinces passed on their ideas in the shape of circulars to their district officers who in turn passed them on to taluk officers, where they stagnated. A firka system as in the case of the Revenue Department is needed for these departments, on the lines indicated herein below :

The Bhore Committee Report, after a careful survey and detailed study of the health conditions throughout the country has recommended the District Health Organization with its smallest unit of administration, the primary unit, which will normally serve an area with population of about ten to twenty thousand people. A number of such primary units (about 15-25) will together constitute a secondary unit, and a varying number of the latter (about 3-5) will form the district health unit. At each of the headquarters of the district, secondary and primary units, will be established a Health Centre as a focal point from which different types of health activity will radiate into the territory concerned by each type of unit.

The Committee has divided its plans into a long-term and a short-term programme; the former requiring 30-40 years and the latter worked out in some detail for two successive stages of five years.

The Bhore Committee has also stressed the need for the national programme of reconstruction on a broad front. It stated the 'advance that can be made in any one section of this front will largely depend on the progress made simultaneously in

land' and the allied call to go back to the land are incompatible with each other. Machinery employs but a minute fraction of our people. Land engages no doubt a bigger fraction, but even so provides only under-employment and a low standard of life. The secret of wider and ampler employment lies only in relieving the burden on land by restoring the craft life of old.

In Japan every home is a factory and there are 50,000 single room or double room factories in Tokyo. From bamboo alone over 120 varieties of artistic things are prepared involving skill and originality. In 1937, 75 per cent of the farmers worked only on farms, 25 per cent engaging also in outside work—such as rural industries. In 1938, 54 per cent farmers held supplementary jobs. In 1941, 58.1 per cent, in 1942, 61.5 per cent and in 1943, 65.1 per cent farmers had supplementary jobs—Japan has fifty thousand factories employing more than five workers in the farm villages, and this number is increasing constantly according to a recent estimate. Government is training village technicians for rural industries in 68 model factories. Short courses in agricultural industries have been instituted and farmers are given free training. Both boys and girls, who have finished their seven years' primary course, are recruited for industrial education.

The main object in encouraging industrial centres in the rural areas is the absorbing of surplus village labour, avoiding congestion of unnecessary industries in the cities, utilizing raw materials on the spot and raising the standard of income of farmers by providing them side-jobs in their leisure months. Government is anxiously encouraging farmers to take up side-jobs in the rural industries in order to stabilize the rural economy of Japan. Soldiers returning home from war areas have been settled in the villages and provided jobs in rural industries since the large industries will take a few years to revive their pre-war glory.

Plan of Reconstruction

The Government of Japan has recently (June,' 48) evolved a plan of rural reconstruction after the war. The preamble states that in order to reconstruct the national economy of Japan, co-operation between agricultural resources and industry is essential. The best and most profitable utilization of raw materials can be made in the villages. That is why village industries' societies which take care of rural industries are advised to evolve ways and means to secure maximum co-operation between village capital and rural labour. Government has laid down that

(1) The centres of the industries listed in the plan should be located in agrarian areas, seaside villages, mountain side areas and the green valleys where raw materials are available.

(2) The capital for such enterprises must be raised co-operatively from the villagers alone.

(3) The labour as far as possible be recruited from the vicinity; exceptions may be made in certain cases.

(4) Raw materials should be locally available; exceptions are permitted because some times they are unavoidable. For instance, a noted village centre of bamboo industry relies on supply of bamboo from an area 50 miles off.

(5) There is no limit on the scale of an industry provided the manufactured articles are in demand in Japan or abroad.

(6) The manufactured goods must be of a high level and different varieties should be encouraged to cater to different tastes.

(7) The village industries society will have full authority to supervise the rural industries.

(8) The society will help in raising capital, in organising industries, introducing new techniques, supplying raw materials and the disposal of manufactured goods.

(9) The society will maintain strict watch on the quality and quantity of manufactured articles and on the fixing of sale prices for local markets.

(10) The society must have close contacts with Agrarian, Marine or Forest Societies in the rural areas.

(11) Capital aid will be provided by the Central Agrarian Bank, when the village industries' societies submit a plan, after a thorough survey of the industrial plan and the necessary statistics.

When thus the sanctity of the home is preserved, and the out-pouring of the human soul in the field of arts and crafts provides also the means of livelihood for people through the play of the hand and the eye, we shall have kept honour above life and spirit above matter. Latterly, the utilitarian ideal has been divorced from the aesthetic sense, but few realize—all the less so under the influence of the mechanical West—that the home is the abode of beauty and Art is the real handmaid of utility. When the two befriend, employment rises on a colossal scale. Waste is converted into wealth. The debris of tailoring, and the scrap emerging out of wood work become in turn the raw materials wrought into magnificent art curios with the aid of colour and design.

It is thus that one-room and two-room factories multiply in every village and town and from the seashell to the cocoanut, from thrown-out pieces and broken fragments you get basic material for carving and colour-spirit. The assemblage of such articles and curios is effected by co-operatives which mobilize the wealth of rural and urban homes, organize the population, provide employment, enrich society, enliven the people and open out a new era of artistic industry. They promote the country's reputation and the people's happiness alike.

Village crafts are but an extension of the spinning craft and khaddar which forms the prince of village industries and constituted the very pivot of the Satyagraha movement in India. It is no less the basis for India's economic reorganization and it ill-behoves the nation to forget the very instruments by which it has wrought its own emancipation. There can be no better example before the Indian Union than that of Japan which, in spite of her defeat, is buzzing with work for her people and is well on its way to full prosperity.

Let us, therefore, concentrate our attention on Khaddar and cottage industries and see that the provinces advantageously pool their products and their expenditure and together organize their sales over the whole nation. Discharge of products is the best incentive to production and both demand our best attention through a well co-ordinated scheme of inter-provincial co-operation. They require depots and showrooms all over the country, but cannot bear the heavy expenditure incidental to individual effort.

others; in the circumstances it is important that simultaneously with the inauguration of the Health Scheme, the reconstruction plans of other departments should be brought into operation in the same areas'.

Different Centres

The scheme proposed consists in putting a primary centre at the centre of a circular area of six miles radius, called the 'Primary Ruro-urban Centre or Rurban Centre' as it links the 100 square miles of villages in their circle having 20-30,000 population to the nearest Secondary Centre at Taluk headquarters and serves to give urban facilities in a rural area.

This centre will have all the six departments which serve the villagers' needs all at one spot, and any villager can reach it by walking five to six miles distance. There will be accordingly in the Health Section, a rural dispensary and a hospital with beds, inoculation and vaccination centre, sale of medicines and drugs, such as quinine, disinfectants and first-aid appliances, and health visitors and midwives; the Agricultural Section will contain manures, improved seeds, and appliances and sprayers which can tackle insect pests of both plant and human diseases like malaria and plague; the Veterinary Section will contain vaccines and medicines for cattle pests; and there will be a co-operative bank, co-operative stores catering to all the essential needs of the villager, a polytechnic which teaches village industries and handicrafts notably spinning and weaving, adult education centre, a model school, rural radio centre, a post office, a police station and a panchayat office.

Officers to man these various sections may be drawn from the existing Government officers and students who graduate from Medical, Engineering, Veterinary, Agricultural and Teachers' Colleges who will compulsorily do social service in such a centre for a period of 1-3 years after leaving their service as part of their courses of training. The budget may be met from the people themselves who can afford to pay for these services, the local boards and the provincial grants, and voluntary agencies like 'Gandhi and Kasturba Memorial Funds.'

The administration may be left to a working committee elected from the local representatives from the villages of this circle, as well as the representatives of experts from the district and taluk officers.

It is hoped that this organization at the village level would give immediate relief to the villagers in a measure in place of the existing development departments which do not extend beyond the taluk stage and, therefore, do not really operate. These primary centres will help to link the village rural life with the urban life, and take the place of the 'middle men' who form the present economic links keeping the high level of rural indebtedness in the country with the consequent low level of the rural standard of life.

Lastly, these centres which take some time to be firmly established will be the distribution centres through which the high level plans to increase production can reach the remotest Indian village.

High-level planning will take time and even when it is in full swing it needs the village organization envisaged here. Urban areas may be industrialized but rural areas will remain forever as the

producing centres for food and raw materials to supply the industries. Now is the time to start organization at the village level and bring together the seven lakhs of villages into groups by affording them relief and giving them the benefits of freedom. When 80 per cent of the doctors live in urban areas to serve 20 per cent of the people and 80 per cent of the people live in rural areas with 20 per cent of the doctors, when there is but one midwife for 30,000 women or 10,000 women of child-bearing age and when there is but one doctor for 6,300 persons the disparity between demand and supply may easily be conceived.

Missing Links

The problem therefore is one of supplying the missing links in food, education, cottage industries and health. It is these links that must be forged forthwith so that what is popularly called Rural Reconstruction may be taken up in earnest.

Panchayats designed to administer forests and crafts, credit and justice, drinking water and drainage demand attention. Cottage industry cries for resuscitation and agriculture calls for long-range as well as short-range attention covering soil analysis, rotation of crops, better facilities for irrigation and supply of smaller machinery and above all of power through electricity to every home and craft. Labour (Agricultural) has been neglected and provides a problem of a delicate and complicated character.

But the real problem of the village is how to impart higher education in the lower reaches of the country. Just as industry and justice should be taken to the village, even so education with its laboratories and pilot factories should be taken to rural areas. At Daurala near Meerut, you have a fine institution, Vijnana Kalabhavan, a which boys who have passed the midd. e pass course are given training in Practical Chemistry, Experimental Physics and higher Mathematics through the medium of Hindi, which correspond to the B.A. standard. Thus should the village be renovated so as to manufacture not only the needs of the country but also to manufacture manufacturers of the future.

The real legacy in flesh and blood left to us by Mahatmaji is represented by the many workers who have devoted their time and talent to the promotion and propagation of his teachings. The constructive workers the various Ashrams which are the power stations established during Mahatmaji's time for the generation of the electro-motive force of Satyagraha have met at Wardha after the Master's departure under the guidance of Vinoba Bhave—the first Satyagrahi of India chosen in 1940 and are striving to keep the banner of Gandhism flying.

They are the real apostles for the spread of the new Gospel and constitute a tower of strength to the cause of National and Rural Reconstruction. The Sarvodaya Samaj they have formed has as its object the promotion of rural service and has the advantage of working under a constitution which is at-once elastic and catholic.

Crafts

In the midst of the din and dust of political disturbances following our independence, we have not been able to give sufficient thought to the best means of consolidating our nation through a revival of crafts and arts. The loud complaint of 'too many people and too little

The detailed organisation of Central and Provincial Boards in this behalf, inventories of the crafts all over, census of qualified artisans and craftsmen, vocational schools in districts, control and mobilization of raw materials, cooperative machinery to grant loans and promote production and distribution of goods, research institutes, travelling exhibitions, deputation of students for study, invitation of experts and technicians, museums, Central, provincial and district or even Taluk, preparation of samples and designs, publication of literature, light and heavy, libraries big and small, pilot machines, patent rights and tourist facilities—all this is the work of Government.

Health

While some of the national problems look too abstruse, others are apt to be dismissed as too commonplace. Health is one such. Its scope is large in its modern connotation as it embraces many social and economic aspects of national life which have been sorely neglected. The health of the nation, rather, its ill-health has been taken for granted and therefore has not been assigned any high priority in national affairs.

How few are aware of the fact that all the insects of the world weigh nine times the weight of the earth and that two flies—a male and a female, produce in two years as many as 2 million flies, food and space being given. The mosquito that works by night has spread Malaria and that which works by day Filaria. It has been rightly observed that there is one (human) sleeper under each (iron) sleeper of the Railways in India, the former having fallen a victim to Malaria. Water-works without drainage have minimized Cholera, Dysentery and Typhoid, but introduced Filaria and Malaria; Malaria which is more destructive of human life than powder and shot, and Filaria which is rapidly spreading in the country reducing the work co-efficient and the man-hours of the Nation.

There are whole areas of fertile land lying unexplored on account of these pests, which will be dealt with in connection with food. We live in the midst of numerous enemies, at home, rats which eat away millions of lbs. of our grain, cats and dogs which spread rabies, flies which spread dysentery, cholera and typhoid; mosquitoes responsible for malaria and filaria, fleas for pleague; bugs and lice, which infest our homes; crows and sparrows, pigs and stray cattle, insects invisible, bacilli and bacteria which are microscopic and dozens of other pests.

A health programme must give attention to all these sources of waste and ill-health and we have so far allowed them to play havoc. There again is Beriberi which is spread by milled raw rice and immediate measures are necessary to combat the evil by forbidding milling of raw rice and to add to this, we have Vanaspati in our midst.

Food

It is a truism to say that life centres round food, and Governments have the duty of ensuring the amenities of life to all—amenities in which food secures the highest priority. After 150 years of British rule, we discover that India is not only not self-sufficient in food but deplorably lags behind the optimum. The food and population problem in India is intriguing and even baffling.

The total land growing food grains in India is 160 million acres, (a) of which

the irrigated extent comes roughly to 50 million acres (b) while that which is purely rain-fed is 100 million acres.

The multi-purpose projects would add 27 million acres at the end of 15 years. This will be just sufficient to cover the needs of the increase in population during the period.

Let us look at the problem from another angle. (a) the cultivated land worked out *per capita* today is 0·6 acres (b) while that required for yielding a subsistence level of 1750 calories—is just less than an acre *per capita*.

We have besides vast resources of fertile land lying waste on account of that fell disease malaria, 2,00,000 square miles or 120 million or 12 crores of acres.

In effect then while we require for 30 crores of population slightly less than 30 crores or say 25 crores of acres of land, we have actually 16 crores of acres under cultivation, 2·7 crores potentially under multipurpose schemes, at the end of 15 years, and another 12 crores of acres under malaria tracts. There is therefore but one forthright remedy—namely securing an immediate increase in the fertility of the soil, three times over by manuring and intensive cultivation and another chance lies in crop rotation and in the manufacture of food yeast, which is protein food, such as has recently been manufactured from sawdust and husk in Germany. Still another device is to prohibit selling and hulling of paddy on mills. This must in any case be adopted as a health measure also, so that we get more rice, and rice not divested of the vitamin content.

Irrigation

As things stand, we are regressing and not progressing. A target is fixed by a local Government, say, Madras. 6½ lakhs is apportioned to the Agricultural and 1 lakh to the Public Works Departments so far as irrigated cultivation is concerned. The former is concerned with improved agronomic methods in use. Its concern is really mathematical, in terms of so many tons of grain, so many of compost and so many of chemical manures—so many bags of improved seed—all being equivalent to so many tons of rice and millet as apportioned to it.

The P.W.D. is concerned with the *cusecs* of water, but it throws the blame on silt which has to be removed, for it is choking the canals. In the dry districts the people are intently looking at the skies for the rain-God to smile and shower his waters on them. In the meantime the Board of Revenue issues the news of a withering crop report. What is wanted for ordered and prompt progress in regard to food or other amenities is co-ordination of departments and a human view of administration. For every three ministers there must be a co-ordinating minister.

Our solution for the grow-more-food problem involves not an Agricultural issue merely, but it is inextricably coupled with the sanitary issue as well. Land and water have to be married by the high priest of energy and then the cultivated land in our country which is but 10 p.c. of the whole can increase to the dimension of the uncultivated land which at present is 90 p.c.

Malarial Tracts

A passing reference has been made to fertile tracts of land infested with malaria so that the problem is a composite one relating to both health and food. If you solve it, you will be shooting two birds

with one shot. The fact is that large tracts of land exist all over India today whose development is at a stand-still owing to malaria.

The story of Panama and its reclamation is well known. It was Sir Ronald Ross who, referring to these tracts, said that the " treasures of the tropical forests are zealously guarded by the two-winged fairy, the mosquito." They have a rainfall of 50 to 100 inches where the soil is fertile and soil erosion had not done its havoc and where the population is sparse and is composed of primitive tribes, being but 50 to 100 to the square mile, who lead a sub-human life.

Three such chief tracts exist in India today; one along the Eastern Ghats 60,000 square miles in area in the agency tracts of Ganjam, Vizagapattam and a second along the Western Ghats, the former being more malarial than the latter. In the North, the Sub-Himalayan belt, the Terai land forms the third.

The first of these has abundant water supply through rivers and waterfalls. The lands in such tracts become more malarious on account of canals carrying water without proper drainage. Malaria is now brought under control. In Wynad in S. India, malaria is being controlled at a recurring cost of less than Re. 1 *per capita* per annum by cutting the contact between the man and the mosquito, by attacking the mosquito and attacking the malarial parasite.

Colonization schemes have been thus made possible in two areas in S. India. By collating, therefore, land, energy, water and man through proper organization, we can promote health as well as food. The only fertile land available in the country in large blocks is in the malarial tracts. Most of the Indian rivers pour 90 p.c. of their water into the seas as the rivers are in floods during the monsoon periods, while quite dry most time of the year.

Only 5 percent of the total Hydro-Electric power of the country has so far been harnessed. India calls out from every corner—Health, Food, Rural Reconstruction, and when the call is heard, —a new India will be coming into existence abounding in health and food. When Land and Water are properly harnessed they yield food otherwise they breed the mosquito and through it promote malaria and filaria.

Social Justice

Politics, being the science and art of human well-being, and embracing as it does within its broadvinculum, the science of economics as well, has so far occupied the attention of Legislatures on the one hand and the Press and platform on the other, that we witness little interest in the study of social problems— which really is a prime need of the hour. The fact is that our society has become effete altogether and what is known as public opinion, which in the ultimate analysis, is the sanction—both intellectual and moral—behind all social organization, has been for long dormant or even dead— thanks to centuries of foreign rule.

Our newspapers have for decades devoted their columns to problems of political bondage and naturally not been able to give an adequate treatment to the subject of our social evils. Long neglect of society under alien influence has impeded all such progress as under self-government would have been effected imperceptibly through convention and change of custom.

Custom has really become petrified where it should have been elastic. The steam-road-roller of bureaucracy which is the embodiment of brute force had immobilized public opinion and dulled if not deadened individual conscience. Mothers maltreat children, group consciousness has remained undeveloped. A boat tragedy which ought not to take place in civilized life passes unnoticed and unremedied. Maternity-mortality and infantile disease devastate life. The spirit of the good Samaritan has been suppressed. Contract has yielded place to status. The time-honoured and traditional amenities of organized society have vanished. Duties have been forgotten and rights have come to rule. The ties of the joint family with its hoary implications hallowed by age and sanctified by custom and functioning in the village as a miniature Labour Union, Insurance trust and cooperative society, are broken as under the impact of a civilization materialistic in outlook and individualistic in interest. Social evils have grown out of customs and manners have been divorced from the chastening influence of an acknowledged head of society. When Royalty has disappeared, the next tier of authority, namely the socioreligious heads have degenerated into priest craft with their threats of excommunication but really they are afraid to strike though anxious to wound. The cement of sympathy that binds the bricks of the social structure has become decayed and the edifice of society has become a mass of debris.

Our task, therefore, is to replace this crumbling authority by a live social headship through renovated public opinion and a rehabilitated social law duly enacted by the Legislatures in consultation as much with the progressive forces of the day as with the conservative elements that still survive the onslaughts of the West.

NOTE

THE LEAD FROM JAIPUR CONGRESS

Reviewing the 55th session of the Indian National Congress at Jaipur, the special correspondent of the "Hindustan Times" sums up the achievements of the session and says, 'It met with a sense of crisis in the air and that crisis continues, notwithstanding all the speeches that have been made and all the resolutions that have been passed.'

The same correspondent further concludes:—

"Never has there been such heart searching as now at the fall from Gandhian ideals and the standards of public conduct. It was fortunate that the ministries escaped so lightly, but that is not the end of the chapter. There is more material for the contemporary historian in the amendments that have been rejected than in the resolutions that have been accepted. It would not be wrong to say that there is a sense of unreality about some of the resolutions which can never lend themselves to practical working."

For some time and very particularly from the Tripuri session of the Congress, one painfully observes that the Congress sessions rather than resolving the crisis, help to deepen it. The Jaipur session

was no exception. It was mainly convened to tone up the standard of public conduct and elevate the morals of the Congressmen and the Congress administrations. The official report of the General Secretaries to the Congress has pointedly brought this moral anarchy prevailing in the rank and file of the Congress to the notice of the leaders, but it appears that except passing a resolution on the code of public conduct, no effective steps have been taken to remedy the root causes of the malady. The warning uttered in the course of the report is a grave one to say the least, which reads as:—

"We may take the liberty of sounding a warning to those who are within the Congress, that unless we become conscious, both individually and collectively, of our vast responsibilities and rise to the occasion and act in a disciplined and selfless manner, there is a danger of our forfeiting the confidence of the people which we have so long and so amply enjoyed. And we shall prove unworthy of the Father of the Nation who laid down his life so that the ideals, which he brought round the Congress to accept and which were the source of its strength, may continue to inspire us."

"The Congress President and the General Secretaries gave much thought to complaints received from almost all provinces about lapses, both on the part of Congressmen and Government. There were also complaints that there was undue interference by Congressmen in the work of Government officers, which gave rise to difficult local situations, crippled the initiative and weakened the sense of responsibility of Government officers, and often damaged the prestige of Congressmen themselves.

"The Congress President, Dr. Rajendra Prasad, wrote both to the provincial Premiers and the P. C. C.s, drawing their attention to this unsatisfactory state of affairs and asking them to take necessary steps to end it. He asked the Premiers to evolve a procedure whereby complaints against local officers could be, apart from legal and ormal action, effectively looked into. He suggested that some liaison should be established between the provincial Governments and the P.C.C.s, which could help smoothen matters and remove the legitimate complaints.

Weaknesses In Congress

"The Congress President was keenly alive to the weaknesses that had of late crept into the Congress organization and the grave damage they did to it. In his speeches and circulars he drew the attention of the P.C.C.s. and Congressmen to these weaknesses and the grave danger they betokened to the future of the Congress organization if they were not remedied betimes.

"Though in general the Ministries in the provinces have popular support in their parliamentary activities, in some cases considerable divergence of opinion has been created over some vital issues between the provincial Ministries and the Provincial Congress Organizations and its seriousness can hardly be minimized. The Parliamentary Board has received complaints from the Provincial Congress Committees that the Ministers went so far as to ignore outright the advice tendered by the Congress Organization which sought to represent popular viewpoint in a dispassionate manner.

"They felt that the Ministries have developed a non-challant attitude and this placed the Congress in an unenviable position inasmuch as it had, as a matter of course, to come in direct contact with the people who held it accountable for the omissions and commissions of the Congress Ministries.

Supra-Governmental Authority

"On the other hand it has been represented to the Parliamentary Board by the Ministers that the Congress Organizations occasionally took upon themselves the role of supra-governmental authority intent on imposing their will on the administration so much so that it has created a sense of insecurity amongst the services which would surely impair their efficiency and affect the continuity of administrative policy.

"It is obvious that the exact relationship between the Congress Organization and the Ministers in charge of administrative work has not been properly estimated resulting in the development of this unhappy tension which stands in the way of proper working of the Congress Organizations as well as of the administration.

"Dr. Rajendra Prasad took serious view of this growing rift between the two wings of the Congress and addressed letters to Premiers and Congress Committees of all the provinces. He gave definite directions in the matter asking them to adhere to the principles outlined in the A.-I.C C. resolutions and suggesting that some liaison should be established to remove legitimate complaints of the public. Unfortunately, no definite move has as yet been taken in this direction in many provinces."

The rift between the Ministries and the Congress Organisation is daily widening resulting in growing indiscipline and disruption in the parent body itself.

Fall from Gandhian ideals has rendered the Congress an ineffective instrument of public good. It has rather become a cesspool of corruption, jobbery, exploitation, nepotism and opportunism. Power is known to corrupt man and the evils that have appeared in the wake of power have to be checked before they undermine the credit of the organisation. In order to arrest downward trend of public morals in the Congressmen, the Working Committee of the Congress has passed a resolution on the "Standard of Public Conduct," which runs as follows:—

"The Congress, under Gandhiji's leadership, became not only a powerful instrument for gaining India's freedom, but also an organization in intimate contact with the masses and attracting their goodwill and loyalty and exercising a moral authority over them. Gandhiji's conception of politics and public life was inextricably connected with high moral standards and sacrifice and service of the people irrespective of caste or creed. This conception influenced the Congress, which he shaped, and Congressmen came to be judged not by their wealth or status in society but by their public service and sacrifice and their individual conduct. Thus the Congress attained a supreme position in the life of the country and public standards rose to a high level. Because of this India not only achieved independence but also gained the respect and admiration of other nations.

"It is this precious heritage that the present and succeeding generations have to preserve. If this hardwon freedom is to be maintained and utilized for the creation of a new society based on social justice and equality of opportunity for all, it is essential *that the Congress and Congressmen should keep intact these great ideals and should continue to serve the people without becoming victims to the lure of power, wealth or privilege.*

"Unfortunately, contact with power has affected many Congressmen and there is a tendency to use this power and position for self-interest. The spirit of disinterested service and of constructive work for the public cause gradually ceases to be the motive power which moves large numbers of people. It is essential, from the point of view of the individual as well as of the nation, that this tendency should be arrested and every Congressman and Congresswoman has a duty and obligation to work to this end.

"Gandhiji combined political work with constructive and productive activity and placed a varied programme of constructive work before the country in which every Congressman, and indeed every Indian, was expected to take part. It was by this service that the Congress organization grew in influence and the nation became strong. Political activity must necessarily be confined to a few, but national activity and service must be the privilege and obligation of every individual.

"In order to renew and revitalize itself the Congress must devote itself to renewing this service in some form of the constructive programme. Unity among the various communities in the country is the first essential, and the removal of all forms of untouchability and the like is equally important. Other important activities are social education of the masses in towns and villages; a countrywide compaign for increasing production in every way and, more especially, through the agency of co-operatives and village industries including khadi, association with the "Grow More Food" campaign, and organization and service of workers in field and factory. It should be the special privilege of young men and young women to undertake these various activities in the service of the country.

"Owing to the widespread reintroduction of controls, it is necessary that Congressmen should co-operate with others in making these controls a success and in checking corruption and breaches of the regulations.

"The success of the Central and Provincial Governments, controlled by the Congress, depends to a large extent on full co-operation between the Government and the Congress Organization. This co-operation should be evolved in each province, subject to broad principles being laid down in regard to it by the Working Committee of the Congress or the Central Parliamentary Board. It is not possible or desirable for individual Congressmen to interfere in Government's activities. Complaints of Government activity or abuse of authority should be dealt with by the provincial Congress Committee alone who should approach the Government for redress. In particular Congressmen must always beware of getting any special facilities, financial or other, for themselves or for their friends and relatives.

"All Congressmen and more specially members of the Central and Provincial Legislatures, must set an example in all such matters and maintain a high standard of conduct.

"In these days of world crisis and national difficulty a burden is cast on the Congress which it must shoulder. Crises are not resolved or difficulties removed by patchwork remedies or opportunist methods. They are only finally resolved by removing the root causes of trouble and by maintaining always a high moral standard. The

Congress, therefore, calls upon all Congressmen and the nation generally to apply themselves to these great tasks in the spirit which enabled them to achieve freedom for this country."

This resolution, which, in the words of its mover, Shri Shankar Rao Deo, is a cup of poison, which will have to be swallowed by the Congressmen if the credit of the great orgauisation has to be saved, has raised wholly unnecessary and unpleasant controversy and a special meeting of the Subjects Committee had to be convened at the request of Pandit Nehru, to reconsider an amendment already passed a day earlier. This was to the effect: "All Congressmen, members of Central and Provincial Legislatures, more especially members of Cabinets, must set an example in all such matters and maintain a high standard of conduct." The Prime Minister considered it to be an aspersion on the conduct of the ministers of the Cabinets which tantamounted to indirect censure on the working of Central and Provincial ministries and got this resolution further reamended with the weight of his personality but at the cost of chagrin, bitterness, and still more widening of rift between the ministries and Congress organisation. The controversial part of the resolution as finally passed at the motion of Pandit Nehru is "All Congressmen must set an example...," and the mention of the ministers of the Cabinets and the members of Central and Provincial Legislatures is omitted.

This is merely saving one's skin and defeating the purpose of the resolution. Why, after all, should the exhortation not apply to Cabinet Ministers, when the presence of the evils mentioned in the course of the resolution is admitted by common consent and the growth of corruption is accepted to be due to the advent of the power. Obviously, barring a few exceptions, which only prove the rule, the greater the concentration of power the greater the corruption. Of all Congressmen, the nation's supreme leader Pandit Nehru, should have at this critical stage set his own example of willingly swallowing this cup of poison and have saved the nation from demoralisation and ruin. That it was not done by the topmost leader at a supreme psychological hour in the history of the nation only shows that the process of poisoning is complete and the malady is incurable.

The cure of the present moral lapses found in the Congress organisation lies along the lines prescribed by the 'Father of the Nation' in his last will and testament, in which he advised disbanding the present Congress Organisation and starting a new one in its place by the name of Lok Sevak Sangha. If the nation has to be saved the deseased part has to be amputed. The Working Committee of the Congress forfeits its claim of appealing to the Nation in the name of Gandhian standards of public morality if it fails to accept the last advice tendered by Gandhiji.

The present diarchy is an unholy alliance between the two wings of the Congress. Shri Mashruwala, in the course of his editorial in 'Harijan' advises inevitable separation of these two wings and says:—

"The present diarchy in the Congress is a great handicap in all its activities. Either the name 'Congress' should be restricted to the parliamentary organisation, or to the non-official organisation of the people. The latter should be an independent body not competing for or holding government offices as an organisation. It should control government only through the force of public opinion it builds up and represents. This can be done only through working directly and unofficially among the people through constructive activities. This does not mean attitude of non-cooperation with or permanent opposition to government. There might be and except rarely should be full and free co-operation without subservience. A great many of the evils which have crept into the Congress Organisation will disappear if the two functions become separate. Gandhiji suggested that the non-parliamentary organisation might adopt the name Lok Sevak Sangha. It deserves to be seriously reconsidered."

If Gandhij's advice was found unacceptable who else can influence the leaders of the Congress for reconsideration. And the crisis must continue leading to national confusion and worse.

Economic Programme

If there is unsoundness in the fundamental basis of national morality, promises and pledges for economic reconstruction do not carry much assurance and conviction to the people. With moral crisis remaining unresolved, much store cannot be laid by mere good intentions of passing 'Economic Programme' resolution. However another important resolution passed by the Jaipur session of the Congress relates to 'Economic Programme', which reads as follows:—

"This Congress generally approves the report and recommendations of the Economic Programme Committee of the A. I. C. C.

"In view of the economic crisis through which the country is passing, it is the duty of the Government, as also of the people, to further the objectives that the Congress has laid down and in so spreading the nation's burden that it may be shared by all and that none may escape it while others are crushed by it. The nation must undergo a period of austerity and must avoid all wasteful expenditure. Conscious and concerted effort must be made on a national scale to meet this crisis in production and price inflation. All the nation's resources, human and material, should be utilized to increase production. While the people must produce more, they must consume less and invest their savings in Government securities and undertakings. There must be economy all round.

"The Government must ruthlessly cut down their expenditure, consistent with the efficiency of administration and the safety of the State.

"While it is essential to press forward large-scale projects in order to increase the food supply and the power resources o the nation, so that the nation may be self-sufficient in regard to food and other essential commodities, *small-scale projects should be particularly undertaken as they yield quick results. This must be done in a planned manner.* Attention must be specially directed to the rapid development of cottage and small-scale industries, preferably on a co-operative basis which will provide employment to many and will immediately produce more consumer goods. A plan of *decentralized production* should form part of the permanent economy of the country.

"To assure the urban population, specially industrial workers, a regular supply of food grains at controlled rates should be provided during the period of shortage. Foodgrains should be procured from the cultivators at a price remunerative to the cultivator and fair to the consumer, after leaving enough for the peasant and his family. Peasants should cooperate with the Government in making the procurement of food-grains a success.

"The Congress endorses the textile policy of the Government of India and calls upon the provincial Governments to see that a fair quota of mill cloth and other essential goods necessary for a minimum standard of living are made available at controlled rates preferably through co-operatives to the villagers. The services of the A.-I. S. A. and A.-I. V.I.A. should be enlisted to organize an intensive campaign throughout the country for production of khadi and other commodities.

"In order to put forth the utmost effort in production, it is essential that industrial conflicts should be avoided, for such conflicts mean a loss in production and a setback to the nation. This Congress congratulates the Central Government on their efforts regarding the promotion of industrial truce and social insurance and recommends the early establishment of statutory machinery for the resolution of the industrial disputes in a just and peaceful manner, and also the establishment of machinery Central, regional and functional, for the study and determination of fair wages and conditions of labour and fair

remuneration of capital, and methods for the association of labour in all matters concerning industrial production such as formation of Central, regional and unit production committees.

"The Congress further appeals to all who are concerned in production to try their utmost to make every effort to this end. The industrialists should bring down their profits and help in raising production. The workers must realize that every strike at this stage is a grave ill-service to the general community.

"The Government of India have announced their industrial policy favouring a mixed economy and leaving a very large sector for development and expansion by private enterprise. The industrialists in this hour of crisis must do their duty to the nation. While it is the policy of the Congress to see that industry is operated in the interests of the nation and that the key industries are progressively brought under State control and ownership, it is not its intention to injure the legitimate interests of the industrialists.

"The provincial Governments are further requested to take steps to have adequate housing facilities provided for industrial labour. Locally available materials should be used to the largest possible extent with a view to decreasing costs and expediting construction.

"The Congress is fully aware of the hardships due to the rising cost of living and the defective system of settlement of disputes and is axious to find effective remedies for both. At the same time, the Congress would like to place the working class on its guard against the disruptive forces which want to exploit the working class for the fulfilment of their political aims. There is no better and greater duty today for all those engaged in industry in whatever capacity than to keep the wheels of production constantly going."

It all depends on how the directive is implemented.

NOTES ON COOPERATIVE FARMING

By Sir Manilal B. Nanavati

COOPERATIVE farming holds out a great promise, particularly for the overpopulated agricultural regions, as a means to minimising farm-costs and maximising agricultural production. But, in practice, the application of the principles of cooperation to farming is a tough task which calls for not only tact and administrative skill but also for a clear understanding of the various issues involved in organising a cooperative farming society. It is also necessary for the organisers to know about the various factors which aid its progress and others which hinder its development.

The two notes given below have been prepared for the benefit of those who are interested in cooperative enterprise for joint cultivation. *Note I* is based on two recent publications viz., 1. "Exploring Tomorrow's Agriculture" by Joseph W. Eaton, and 2. "Cooperative Communities At Work" by Henrik F. Infield. It gives the types of such societies and the conditions under which they succeed or fail. *Note No. II* which is based partly on the experiments narrated in the above mentioned publications and partly on our own experiences of the Cooperative Movement, shows the conditions under which cooperative farming can succeed in India and the steps to be taken therefor. On a careful study of the existing conditions in India, it will be realised that instead of making a few experiments on a comprehensive basis or along with them, we have to re-orientate the cooperative movement as a whole so as to create ultimately conditions for a wide-spread adoption of the system of cooperative farming. It is hoped that these two notes would help to make a realistic approach to this important problem which is engaging the attention of the country.

Planning for the Cooperative Farm

1. Land

These are the sources from which the land may be secured for the Society: (i) Government, (ii) Landlords and (iii) Members. Where the land belongs to the Government, it may be leased either to the members individually or to the Society collectively. Lands from the landlords should be leased by the Society on a fairly long term. Where members have their own lands; some more may be taken on lease if necessary and all the lands may be jointly cultivated by the Society.

2. Selection of the Area

It is hazardous to launch an experiment on lands which are subject to violent climatic changes like droughts or floods. Where the rainfall is precarious, the Society must be capable of organising crop insurance. But, it is highly advisable to avoid such areas during experimental periods. In fact, the Society must have lands which are capable of development at reasonable cost and also possess adequate facilities such as roads and means of transport to market its produce.

3. Membership

The experiments made so far show that the members either (i) belong to a fraternity as in Hutterites,[1] or (ii) belong to the same religious order as, for example, the Jews in Palestine, or (iii) are *bona fide* cultivators and/or landless labourers as in the case of the Madras Land Colonisation Societies, or (iv) colonists or settlers like war veterans with no previous experience of agriculture. It may be noted that the success of the enterprise depends largely on the selection of members, their ability to go through trying times during periods of formation of the Society, their capacity to work for higher cooperative ideals and better living.

4. Types of Cooperation

Cooperation may be either (i) confined to cultivation only—with or without reservation of homesteads or (ii) cover entire agriculture as under collective farming or (iii) may be further extended to purchases and sales and even to social services such as education, hospitalisation etc., along with cooperation in cultivation.

5. Management

The internal administration of the cooperative farming may be entrusted either to (a) leaders selected by the members or (b) a specially selected staff for the management and for keeping the accounts and allocating the tasks. The supervising agency, however may be either (i) autonomous from among the members—leaders of the organisation (ii) promoters of the movement as in the Delta-Providence Societies[2] or (iii) supplied by the Government sponsoring the movement.

The success of the enterprise will depend upon the ability of leaders to bring about impartial and harmonious working as also upon the tact and qualifications of the supervising agent.

6. Types of Assistance from Outside

The members of the society may obtain help in the form of (i) costly implements on hire from tractor farms as in the U. S. S. R., (ii) equipment, technical advice and assistance as in the Farm Society Administration, including housing facilities, (iii) loans and grants from

1. Cooperative Communities at Work by Henrik F. Infield, pp. 8 to 24.
2. Exploring Tomorrow's Agriculture, pp. 202-204, also, Cooperative Communities At Work, Infield, p. 174.

multipurpose society and have appreciated the benefits arising out of cooperative method.

II

How Beginnings May Be Made Under Indian Conditions

There would be two distinct types of Cooperative Farming Societies: (1) for lands newly acquired or reclaimed and (2) for lands already under cultivation.

Societies under group (1) may be for (a) first class cultivators from congested areas. These may be either cooperative farming or cooperative agricultural societies or both, (b) small holders and landless labourers and tenants, (c) men newly taking to cultivation e.g., retired soldiers belonging to various castes and communities. Societies under group (2) should be for (i) first class cultivators in the village (ii) small holders and tenants pooling their resources together.

Each of the above type would require different treatment and assistance. Societies of landlords and big cultivators, for instance, would need loans for housing. Small holders and tenants would need guidance and help almost at every step until the Society gets into satisfactory working. Non-agriculturists being settled on land are apt to take up the work half-heartedly and provision, therefore, will have to be made to give them adequate training to make them efficient cultivators.

There is no denying that some of the factors hindering the development of cooperative farming (vide 9 above) obtain in India and would present serious obstacles to progress in this direction unless we have a systematic plan for the formation and working of such societies.

Societies under (a) will succeed only under extra-ordinary conditions with a very reliable leadership and with members who have absolute faith in their own ability to develop agriculture as also in the advantages of the cooperative method.

Looking to conditions in India, two distinct methods may be adopted to popularise cooperative farming (a) to form cooperative societies where conditions look favourable and results almost assured and (b) to prepare the ground for Cooperative Farming so that in course of time people themselves come forward to form such societies, having had their apprenticeship in the working of cooperative methods in various directions and appreciated the benefits of joint working.

As for (b), it is highly desirable that attention should be paid to formation of multipurpose societies all over so that the scope of their working can be widened to include farming subsequently when the members have fully realised the benefits of cooperation and would be prepared to stick to the movement under all circumstances. Our approach to cooperative farming, therefore, must be from two sides: where possible, the agriculturists may directly combine and form a cooperative farming society; in other cases, the members may be asked to form cooperative associations with less ambitious aims and objectives and then gradually develop the societies until they are capable of taking up cooperative farming. The various stages in this development may be as follows:

1. Cooperation in a business i. e., for purchase of farm requirements, and in agriculture, sale of farm produce and finance and cooperative ownership of costly implements and other farm equipment, and in improvements in the technique of agriculture and provision of some social services.
2. Cooperation for consolidation of holdings.
3. Joint programme of cultivation—each member cultivating his own farm but according to a plan agreed upon by all members.
4. Joint cultivation of all farms. We may call it collective farming.

Each of these stages would, in practice, vary considerably in its details. To help the societies to develop in this order, Government must maintain a specialised staff. If cooperative farming is to spread on any appreciable scale, the whole of the cooperative movement would have to be reorientated with this end in view.

While the shift of emphasis from credit to multipurpose type of societies would create the necessary atmosphere for the formation of cooperative farming societies, further measures would be necessary to help such societies to come into existence and to assure their smooth progress. The most important of these measures are as follows:—

1. A special study of the agricultural conditions of the locality and to find out what definite and marked benefit would accrue from the enterprise. A distinct gain must be established, such as larger and more varied production, saving in expenditure and better realisation of values through collective sales. Otherwise, most of the members would hesitate to pool their resources and consider the venture as a leap in the dark.
2. The law of inheritance would have to be modified to prevent actual subdivision and fragmentation of holdings; otherwise, the cooperative farm would be lacking in stability.
3. To find out men from the village and outside who will be able to keep proper cost accounts and task assignments to members.
4. To collect such implements as would increase production and take them on lease as from a Government Farm.
5. To prepare land surveys for realignments of fields. Before this is done it is advisable to consolidate the holdings and rearrange them. It would be easier to realign consolidated holdings than scattered ones. This will reduce capital investments to the minimum.
6. To obtain Government assistance for 2, 3 and 4 and arrange for loan, subsidies and finance, if the society has not got funds of its own or is unable to borrow from its own bank. Government's help and guidance must be prompt, businesslike and near at hand.
7. Government should appoint superior staff for guidance and advice to ensure that the societies work according to plan and that mistakes are discovered in time. The local staff engaged to work relating to accounts, agricultural technique, farm management, etc., should be well paid as the success of these societies largely depends upon their efficiency and zeal.
8. arrange for agricultural programme including crop rotation, new crops, manuring and irrigation.
9. Assignment of work among members, selecting leaders or appointing committees for management.

(a) banks as in case of Mexico, KVUTZA[1] (b) from the Government as in the Farm Security Administration (c) Societies' own funds as in Hutterites, or (d) from the members' own contributions.

7. *Conditions which Lead to Success*

(i) There must be an assured increase in production and income and, if possible longest seasonal employment e.g. the Mexican Experiment (KVUTZA) which was successful because most of the members were tenants of landlords and cooperation offered them as a distinctly improved income and higher status.

(ii) To ensure harmonious relations among the members, there must be homogeneity of membership or identity of interests e.g. Hutterites which is a semi-religious body.

(iii) Much depends upon the leadership and the spirit of cooperation of the members. They must be intelligent and more or less of equal status, as, for instance, the Jews in the land settlements in Palestine.

(iv) The work as well as the produce must be distributed equitably, as in the Bulgarian Experiment. This experiment which was initiated for the purpose of cooperative distribution of farm labour, has been superseded by cooperative farm proper. The benefits of this transformation are economy of labour as well as of expense to the organisation.

(v) The members must have the capacity for hard labour and to undergo privations in the early stages.

(vi) The Society must not ignore the need of maintaining individual interests through homestead land and production.

(vii) The members must be helped from outside so as to keep them loyal to the Society.

(viii) Often, the force of circumstances alone suffices to make the members run the Society successfully e.g. the land settlement in Palestine.

8. *Causes of Failure*

(a) The greatest danger to the Society comes from the friction between the members and the management, bureaucratic tendencies in the leaders or supervisors, and bad manners of some of the members. The Llano Cooperative Colony founded in 1914, failed because of its faulty plan, discrepancy between principles and practice, inability of the members to put up with the difficulties in the initial stages and low admission standards. "Dissatisfaction, splits, loafing by some, overwork by others, farm left to scanty operations," are among the other causes mentioned.[2]

(b) Some ventures have failed, due to frequent crop failures or fall in prices as, for instance, the Sunrise Community.[3]

(c) The Farm Security Administrations Experiment in the U. S. A. failed because the costs were disproportionately high as compared to the results.

(d) Many Societies come to grief due to friction among the members caused by (i) partiality (ii) incongruity of interests as for instance, where big landlords as well as small ones or landless people are members of the same Society (iii) unequal social status of the members.

1. Cooperative Communities at Work, pp. 51-71 and 117-142.
2. Cooperative Communities at Work, pp. 25-40.
3. Ibid.

(iv) differences among women-folk and (v) religious or caste differences.

(e) A Society's progress is sometimes hindered where it tries to adhere to rigid and stereotyped rules and byelaws which ignore local customs and conditions.

9. *Conditions under which Cooperative Farming may succeed in India*

1. New land settlements as in the U.P. under the refugee administration have considerable chances of success, provided the members are *bona fide* agriculturists and are of the same status. Otherwise, they will leave the farm later on when peaceful conditions are established.
2. In special circumstances, cooperative capitalistic farms with membership composed of big landlords may succeed where large funds are required, provided the workers are given a standard wage and share in profits.
3. Where men are of unequal status men in lower grades may be guaranteed a minimum wage and a minimum income by Government. This special subsidy is necessary to lower grade workers to ensure their enlistment in the membership of the Society.
4. Where the members are of the same status, the successful working of the society will depend upon an assured increase in production and net income. This, therefore, requires a thorough survey of the area and an assessment of the possibilities of increased income before the Society is formed.
5. From the organisation of the Society to the realising of noticeable benefits from cooperative farming is a long way. It is, therefore, necessary for the members to carry the project through with great patience and under strict discipline.
6. The Society should be provided with adequate funds in the form of short term and long term loans and initial grants for housing and other equipment.
7. Servicing should be near at hand and prompt.
8. New lands should be exempted from assessment until they are brought under full cultivation and become a paying proposition.
9. The Society must be given free service of the Cooperative Department by way of audit and supervision.
10. Guidance should be in the hands of specialists trained in accountancy, works management, agricultural engineering, agricultural technology, etc. These experts must be social but also firm and tactful.
11. Other State assistance such as free service from technical departments such as agricultural, veterinary, public health, etc., in planning for the development of the farm. Red tape and delays in administration should be avoided. The assistance should be whole-hearted and Government must trust the men on the spot.
12. Members must have completely sunk their caste and community differences and be free from village squabbles and local politics.
13. Members must be taught to appreciate the significance and value of the cooperative method. They should be made to realise that cooperative farming does not stand merely for pooling their holdings and giving them wages in proportion to their labour but for certain definite economic and other benefits.
14. The members must have undergone training and discipline in a

10. Organisation of subsidiary industries to help members of the cooperative farming society to supplement their farm income.
11. Development of social services along with joint cultivation so that the men get the full benefit from cooperative work. Every aspect of social work should be attended to—health, sanitation, education and entertainment. Reduce the drudgery of the women in the villages and thus enlist their cooperation. Develop their dairy industry and instruct them in their domestic sciences. If a woman worker could be engaged to help them, it would serve as a stimulus in getting the cooperation of the women folk in the new venture.
12. The most essential factor in cooperative farming is that every step should be taken to ensure a definite increase in production because, otherwise, in the case of a fall in the yield, the members would cease to be loyal to the society. Necessary measures, therefore, should be taken to prevent crop failures. These measures may take the form of irrigation or/and larger areas being made available to the society to provide an insurance fund.
13. The most difficult problem would be to get the cooperation of the landless workers of the small holders. It should be made worth their while to join this society. Landless workers should get their fair wages and a small holder a decent return. Possibly in the initial stages an adequate income should be guaranteed by the Government to both these classes. It is they who need the utmost help and they should be induced to join the society.
14. Fall in agricultural prices has been responsible for the winding up of many cooperative farming associations. Experience during the last depression has demonstrated the disastrous consequences of fall in prices on Indian agriculture. Stabilisation of agricultural prices, therefore, is a fundamental requisite to the development of cooperative farming.

The success of any venture depends largely on the human factor—the integrity and ability of the men behind it. This fact cannot be overlooked while forming associations for cooperative farming. Normally, every individual likes to work alone in his own domain and would not like to surrender even a part of his individualism or economic freedom to any association, unless he is assured of a material gain. Hence, the importance of a preliminary survey of the possibilities of increasing the farm income before forming the society. This also brings out the necessity of selecting the members, since those who have no faith in cooperative ideals or who have not been trained to work according to cooperative principles would only shirk their duty and lead the society to disaster. Where the cooperative society has developed stage by stage, the multipurpose cooperative society would have provided the necessary apprenticeship to the members and qualified them for running the cooperative farm. But in other cases, all possible care would have to be taken to ensure that the indifferent, or diffident people are kept out of the society. Cooperative farming would succeed only where each of the members is not only experienced

and trained in the cooperative method but also imbued with hope, courage and determination to contribute his maximum to the working of the society.

We are all agreed that cooperative farming is a very complicated undertaking and a costly experiment. It should, therefore, get guidance and support from a very efficient administrative machinery from the very start. A cooperative farming society will need assistance from at least three departments of Government, Cooperative, Agriculture and a Department concerned with land consolidation. Therefore, there must be a perfect harmony among these agencies, specially between the first two which will have to work together all along the career of the Society. Usually no two departments of Government cooperate with each other and therefore most of our efforts fail or do not get the results expected of them. At least that is the experience in the working of the cooperative movement. Therefore whichever Department is entrusted with the administration of the cooperative farming (though in the natural course the Cooperative Department should have the preference) that Department should have a specially qualified staff to make the preliminary surveys, to prepare schemes for farming and to see that the programme works to the plan. For these purposes it shall not have to depend upon the Department of Agriculture for advice and guidance. If we want to avoid mistakes of the past, this is one of the conditions precedent to the large scale formation of cooperative farming enterprises.

Cooperative Farming is one of the items in the programme of land reforms to be carried out in India. The central idea in the land reform movement is to create economic peasant farms. To that ideal our energies are to be directed. The programme for this can be summarised as under:

1. Declaration of all land as state property; elimination of intermediary interests in land; land to be given to actual cultivators with occupancy rights, with restrictions on their right to transfer and subdivide the holding.
2. Each occupancy holding to be an economic unit and as far as possible, in one consolidated block.
3. Making the farmer live on the farm or as near to it as possible.
4. Prohibiting the use of land as security for non-productive purposes.
5. Cultivation of the land by the man who owns it, or has the occupancy right.
6. Abolition of share cropping and its substitution by low cash rental based on a certain multiple of Government rent and correlating rent with price levels.
7. Assessment on land to be graduated, uneconomic holdings paying less or nothing; agricultural income-tax to tap more revenue from the larger groups.
8. Regulation of land values on the basis of yields, abolition of speculation in land and provision of cheap finance for cultivators who want to own lands and cultivate them.

This programme would require a good deal of legislation and take time to bear fruit. In the meanwhile, cooperative farming may assist in some selected areas to help the cultivators, though it would be very difficult to assist small tenants and uneconomic farmers to improve their lot unless they are bodily removed to some

remunerative employment. Cooperative farming for these classes alone would be almost impossible of achievement as they would be too many for small areas owned or cultivated by them, unless larger areas owned by absentee landlords are leased out to such societies, so that the area of the cooperative farm is sufficiently enlarged.

—*The Indian Journal of Agricultural Economics*

COOPERATIVE AND MULTI-PURPOSE SOCIETIES

By Shiva Nath Katju

ENGLAND, it is said, is facing the battle of dollars, and of the balance of payments. India may well be said to be engaged in the battle for production. It is obvious that unless India becomes self-sufficient in its food supplies it may soon have to face chaotic conditions. One Minister of the United Provinces Government is reported to have said that the Grow More Food Campaign in the Province had proved a dismal failure. This is a correct statement of the existing position, not only in the United Provinces but also throughout India. The Grow More Food campaign was started with a great beat of drums, and for years past the country has been flooded with paper reports of its magnificent results. And now the truth is out. That was all paper stuff. There was nothing tangible behind it. An enquiry into the causes of this failure is a matter of urgent public importance. An examination will reveal gross corruption and irregularities on the part of the officials in charge of this so-called campaign. Corruption is bound to occur when petty officials of the Revenue and the Agricultural Departments are entrusted with money with instructions to deal with individual peasants. This procedure enables low paid officials to confer substantial favours on petty cultivators and proprietors and they do so for a substantial consideration for themselves. There must be a complete reorientation of policy in regard to this matter if there is to be increased production in any substantial measure. There is now a growing consensus of opinion that the only method to secure solid results is the cooperative method. If the cultivators could only be persuaded to pool together their fragmentary holdings into large farms, and to cultivate the same cooperatively, then in twelve months time recurring food crisis in India can be averted. But such cooperative farming requires enormous public education and propaganda. The Indian cultivator is not only individualistic to the core but is also exceedingly conservative and suspicious of new methods.

This public education will take some time, even though propaganda may be immediately intensified. Meanwhile, we must pursue without the least delay other methods to promote the causes of cooperation, and that method, it is again now generally recognised is by encouraging the formation on a country wide basis of multipurpose production and marketing cooperative societies. Up till now credit has been the obsession with the cooperative departments throughout India. The provision of cheap money is supposed to

be the panacea of all ills of the cultivators. No one stopped to think that the problem is not the provision of cheap money; the problem is to remove the need for borrowing at all. If the cultivator continues to be needy, he will borrow money, and if you lend it to him at 12 per cent instead of the village money lender's 24 per cent, you do not really confer any great benefit on him. The remedy is to remove the need for borrowing, and that can only be done by enabling him to raise his production, and this he can do only if improved seeds, better manures and better agricultural implements are placed at his disposal, and he gets water for irrigating his fields when he needs it. All this can only be secured to him through well organised cooperative production societies. And again, he must not only produce more; he must get more for what he produces. And this leads to the marketing of his produce. He can only get more by the elimination of all middlemen. The consumers in towns and cities should be brought into direct contact with the producers in the villages. All middlemen must be eliminated. These multi-purpose societies can discharge easily with proper management at least for functions:-

(1) Better production and marketing of grain produce, including sugar cane.
(2) Better production and marketing of dairy produce.
(3) Development of Khadi and other cottage industries and marketing of their products.
(4) Supply of consumer goods of everyday use in rural areas such as kerosene, salt, sugar and gur and cloth and tobacco.

It is of prime importance that these societies should have the largest possible membership in the village. In fact, the aim should be to have every single cultivator and dairy man on the register of members. Government can do its bit in bringing about this result by making it known that in future it will only deal with such societies and not with individual cultivators. All grants for the Grow More Food Campaign, for reclamation of waste lands, for improvement of cattle breeding and cattle welfare, and for improvement of agriculture, in short every kind of Government assistance should go to the peasant through his society and not directly. The society will thus become a powerful organisation and it will escape depredations at the hands of Government officials of various departments. This is the only salutary method of rooting out corruption from public services. If the society wants finance, the cooperative banks and even the government should help it liberally. In its turn the society will help its members not in cash but in kind on the security of the produce which must be marketed through the society.

It is a matter of satisfaction that the Cooperative Department in the United Province has started on these right lines, and during the last six months over 6,000 such societies have been formed, and the more pleasing feature is that somewhere between 70 to 80 % of the cultivators are reported to have willingly joined such societies. Indeed, the Government ordered that no society was to be registered unless it included as many as 75 % of the cultivators of that area. It is true that these are abnormal times and it is difficult to secure improved seeds and better implements and manures and fertilisers in requisite quantities, but it is expected that even with all these

difficulties what is available will be utilised to the utmost extent and yield substantial results.

An instance of how these marketing societies can yield most beneficient results is available from Orissa. In that Province there is an inland sea called the Chilka. The Chilka is famous for its fisheries. These fisheries are owned partly by Government and partly by private jagirdars. There are thousands of fishermen who live on the Chilka and have been carrying on their calling hereditarily from hundreds of years. Uptil now they were being fleeced by middlemen who would buy fish cheap and sell it at very remunerative prices in the big markets like Jamshedpur, Kharagpur and Calcutta. All these middlemen have been eliminated by the establishment of fishermen's co-operative unions. Every member brings his catch to the union office on the bank and is forthwith paid the basic price determined on the quality and quantity of his catch. The fish is then properly graded and packed in ice and sent to the Calcutta and Jamshedpur markets, where it is sold at very substantial prices, the difference between the basic price paid to the fisherman and the Calcutta price being as much as Rs. 25/- to 30 per maund. Subsequently accounts are made up and all profits made on this export trade are divided between the members in proportion to their supplies in the shape of bonuses and dividends. These Chilka fishermen societies furnish a most valuable example of the great benefits which can be conferred by the co-operative marketing. The essence of co-operative marketing, be it remembered, is not merely acting as a broker or helper to the producer and merely bringing him into contact with the purchaser. The essence of co-operative marketing is that the producers all pool together their produce, and then leave it to the executive committee of the society or the union to sell the goods at a suitable time at the most remunerative rates in their discretion. And that is the principle which is followed by these Chilka co-operative societies to the greatest benefit of their members. This example of co-operative enterprise must be commended to all producers of foodstuffs of all kinds throughout India.

GROW MORE FRUITS

PART II E

ORANGE AND OTHER CITRUS FRUITS

By B. L. Choudhri

(Continued from December 1948 issue)

CITRUS fruits form one of the most important groups of the fruits of the world. These fruits are of tropical region and a few of these are considered to be indigenous to India. China is also recognised as a home of a few varieties. From tropics the fruit has spread all over the world and is now grown under a wide range of cultural conditions. It is the main cultivated fruit of all parts of tropical and sub-tropical regions.

There are various varieties of citrus fruits. Their local names are confusing.

A variety may be known by different names at different places and at the same time a name may mean different varieties at different places. There is confusion also in their nomenclature and classification. For an orange gardener the classification of varieties given in the "Report on the Marketing of Citrus Fruits in India" is the best. I am taking the liberty to summarise it for the benefit of the readers.

1. Sweet Orange

Botanical name :- Citrus sinensis Osbeck.
Popular name :- Sweet Orange, tight jacket orange.
Varieties(Popular):- Valencia Late, Washington Navel, Satgudi, Batavian.
Regional names:- Mosambi (Bombay), Narangi, Malta (North India).

2. Mandarin Orange

Botanical name :- Citrus nobilis, Lour.
Popular name :- King Orange, loose jacket orange, Mandarian.
Varieties (Popular):- Kamla, Nagpuri, Coorg, Sylhet, Darjeeling.
Regional names :- Santra (C.P.), Narangi (U.P.), Kamla (Bengal, Orissa, Madras)

3. Sour Orange

Botanical name :- Citrus aurantium Linn;
Popular name :- Seville Orange, Bitter Orange, Sour Orange,
Varieties :- Kathairee nimboo.
Regional names :- Khatta, Karana (N. India).

4. Lime

Botanical name :- Citrus aurantifolia, Swingle.
Popular name :- Lime.
Varieties (Popular) :- Pati-nibu, Kagzi nibu, Gora nibu, Taba nibu.
Regional names :- Kagzi nibu, Khata nibu, Pati nibu, Gora nibu, Jameri (Bihar)

5. Lemon

Botanical name :- Citrus lemonia, Osbeck.
Popular name :- Lemon, Sour lemon
Varieties (Popular) :- Lisbon, Eureka, Galgal.
Regional names :- Khatta, Khatti, Galgal, Bajouri, Jamburi, Id lemon.

6. Sweet Lemon

Botanical name :- Citrus limonia-var, Limetta, Hort.
Popular name :- Sweet lemon, Sweet lime,
Regional names :- Mittha nimbu, *Sarbati nimbu.*

7. Pomelo or Shaddock

Botanical name :- Citrus grandis, Osbeck.
Popular name :- Pummelo, Shaddock.
Varieties :- Chakot a, Mammoth, Round, Pear shaped.
Regional names :- Chokatra, Sadhaphal, Karna, Batabi nibu.

8, Grape-fruit

Botanical name :- Citrus Paradisi, Macf.
Popular name :- Grape fruit, Pomelo.
Varieties :- Marsh's seedless, Triumph, Duncan, Hall, Foster, Mc. Carty.

9. Citron

Botanical name :- Citrus medica, Linn
Popular name :- Citron

15. Hints on Orange Cultivation

Out of all these types oranges are by far the most extensively grown. In India, the area under orange* is 78.3% of the total under citrus fruits.

Central Province, specially the Nagpur district, is famous for orange. Orange from here and Sylhet (Assam) are in demand all over India. The Sylhet variety, though small, is sweet and has less seeds. The Nagpur variety of Katol Tahsil is equally sweet and is larger in size of fruits. Mosambi is a type of light skin orange. Its skin is coarse with stripes on it and cannot be easily pealed. The juice also cannot be easily extracted. The juice is sweeter than that of an orange and is of a different taste. Poona Mosambi is famous for its colour and sweetness.

Soil:— Success in orange cultivation depends on the qualities of the soil and the type of climate. A greyish coloured rich soil (loam) possessing good water-retentive capacity, at the same time not water logged, is suited for orange. Lime contents of the soil is also important. The soil should contain 5% of calcium carbonate. Stephenson in 'A Manual of Tropical Citrus Culture' observes, "A free sandy loam with a good humus content may be said to be the most suitable soil for Citrus. The best Citrus is grown on a lime stone subsoil."

The following types of soil should be avoided for orange growing :—

"(a) Heavy black cotton soil of great depth which is very sticky and plastic and resistant to the percolation of water (it is not possible to grow orange tree successfully on such soils even with the aid of artificial under-drains).

(b) Very shallow soils underlaid with Murum or coarse sand or lime.

(c) Soils underlaid with a hard pan-rock like hard layer of soil.

(d) Black cotton soil underlaid with 'chopan', a sticky yellow clay.

(e) Black cotton soil underlaid with 'Bhis' granite murum of kaolin which is very plastic.

(f) Water logged soils; water logging may be due to any cause such as sticky nature of soil, situation of soil at low places in valleys or depressions approximately of high layer in water tanks, rivers or streams, impervious sub-soil and high water table etc.

(g) Sandy gravelly or stony soils.

(h) Alkaline soil and soils where irrigation water is alkaline."†

Control of alkalinity:—The PH value of the soil of the orange garden should not be more than 8. In the case of soil of high alkalinity attempts should be made to reduce it. Gypsium is commonly used to neutralise such soils. It is applied at the rate of 5–10 tons per acre. It not only supplies necessary amount of calcium in a fairly soluble form but also counteracts the alkaline condition of the soil.

Climate:—The members of the citrus family of plants are chiefly found in the warmer temperate and sub-tropical zones. The orange tree is perhaps the hardiest member of the family but the individual varieties seem to have their idiosyncrasies e. g. Nagpur orange (Santra) cannot be grown to perfection in any part of India except the central parts of C.P. where the climate happens to be most favourable for its cultivation.

Orange can be grown on the elevation of 1 to 4 thousand feet but the

*Report on the marketing of Citrus fruits in India.

†Dr. A. A. Khan; Fruit Series leaflet No. 15; Department of Agriculture, C. P. & Berar.

Nagpur variety do not succeed above 2,000 feet. In Baihar tahsil of Balaghat district this fact is very characteristically noted.

Propagation:—Plants can be raised by seed, cutting, layering and budding. The most common and trade method of propagation is budding. Plants propagated from seeds seldom come true to the type. The method of raising oranges by budding has previously been dealt with.

Planting:—Oranges are planted 20 feet apart. After marking the position by fixing pegs, pits of 2′ x 2′ x 2′ dimensions are made and treated in the manner suggested previously. Planting is generally done in the beginning of the rainy season, after the few heavy showers. In places of heavy rainfall it is better to do planting in October, November i. e., at the close of the rains.

Irrigation:—Plants require regular irrigation till they are four years old. From then onwards watering may be done according to necessity. This will depend on the type of soil and prevalent weather condition. Irrigation, however, is essential when the plants are in bloom. During the hot weather monthly irrigation should be done.

Manuring:—Orange is one of the most exhausting crops. Hence it responds readily to judicious manuring. On soil lacking in organic matter and other nutrients, the plants will be stumped, sickly, with yellowish leaves and poor crop. In the early stage of growth the one element most in demand is nitrogen. This gives a steady strong growth to the plant. At the later stage when plants begin to fruit other elements should be adequately supplied. The C. P. Agricultural Department recommends the following dressing mixture.

Mixture I	
Superphosphate	30 lbs.
Potassium sulphate or chloride	16 lbs.
Oil cake	44 lbs.
Ammonium sulphate	10 lbs.
	100 lbs.

or

Mixture II	
Niciphos grade I	12 lbs.
Potassium sulphate or chloride	16 lbs.
Oil-cake	72 lbs.
	100 lbs.

Apply in 1st. to 2nd. year trees at 3 lbs. per tree;

2nd to 3rd. year 4½ lbs. ,,
3rd to 4th. ,, 5½ lbs. ,,
4th to 5th. ,, 6 to 8 lbs. ,,
5th to 6th. ,, 9 to 10 lbs. ,,

Mixture III for Fruiting trees

Superphosphate	40 lbs.
Potassium sulphate	20 lbs.
Oil-cakes	30 lbs.
Ammonium Sulphate	10 lbs.
	100 lbs.

Note:—Any oil-cake except *mahua* cake can be employed in the preparation of the mixture.

"This is applied at 10 to 20 lbs. per tree as they increase in age upto 10 to 12 years and after this remains constant."

"In addition to the artificial fertilizers mentioned above sufficient quantities of thoroughly well rotted cattle manure or other bulky organic manure should be added to the soil. In the absence of adequate quantities of organic matters, the soil will lose its physical conditions and the secondary effects produced thereby will adversely affect the orange plants." Green manuring may also be done with advantage.

Allan recommends a better and safer combination as follows :—

1st. year:—20 lbs. of (cattle dung) Farm yard manure.
½ lb. ammonium sulphate.
1 lb. wood ash.
½ lb. Bonemeal or superphosphate.

Allot annual increment to this at the following rate upto the end of the sixth year.

8 lbs. Farm yard manure.
½ lb. ammonium sulphate.
1 lb. wood ash.
½ lb. Bonemeal or superphosphate.

"From this point till the tenth year the same amount of increase per annum of cattle dung and ammonium sulphate (or cake) can be maintained, but with a slight increase of the proportion of bonemeal and wood ash to 3/4 lb. and 1½ lb. respectively.

A full grown tree (10 years) will thus get

Cattle-dung	... ...	90 to 100 lbs.
Ammonium sulphate	...	5 lbs.
Bonemeal or superphosphate	...	6 lbs.
Wood ash	... ...	8 to 10 lbs.

Method of application :— Apply cowdung manure at the beginning of the rainy season. The constant use of bulky organic manure like the farm-yard manure results in the deterioration of the quality of fruits. As a corrective measure, it is suggested to apply F.Y.M. and urine earth in alternate years.

Fertiliser mixture is best given after the rains.

Deficiency of minor elements in the soil of a Citrus Orchard :— "Besides nitrogen and calcium, the elements which are known under some conditions to be deficient or unavailable from the stand point of citrus production are zinc, manganese, copper and iron.

"Zinc deficiency results in reduced growth, lower yields and small fruit sizes. The leaves are progressively smaller towards the end of the branches and the green colour fades to light yellow between veins. In severe cases the limbs die back. The symptoms are most pronounced on the southwest side of the tree.

"Manganese deficiency is indicated by leaves in which the areas between the veins fade to light green. The symptom is most characteristic on mature leaves. They differ from zinc deficiency leaves in that they are not reduced in size, the faded areas do not become yellow and the symptoms are most prominent on the northeast side of the tree.

"Copper deficiency produces ten or more different symptoms but usually only a few are found in any one orchard. The trees are usually characterised by vigorous looking dark green growth with multiple buds and die back at the tips. Gum pockets may be found in the twigs at the base of leaves. These pockets may exude gum and they may split open to form cracks in the bark. Twigs, leaves and fruit may develop prominent gum pockets where seeds normally develop. The set of fruits is very light and the green fruit may appear as if it were severely damaged by Citrus red mite. Many of the fruits crack open as they mature. Lemons tend to remain woody.

"Iron deficiency is indicated by yellow foliage, die back, pale fruit and light yield."*

Stevenson in 'Tropical Citrus Culture' refers boron as another deficient mine

*S. C. Johnston in Citrographs, Vol. 31, No. 11, August '46.

element. Its deficiency can be eliminated by the use of common boric acid powder. "A Boron deficiency shows up in foliage of the plants, which has a yellow streak in it and inclined to be spotty; in fact it is called spotted leaf."

Pruning of Citrus :—In the absence of any comprehensive experimental work, no definite rules can be laid down for the pruning of citrus. The following principles discussed by Brichet in the article on pruning of citrus in Algeria may be followed with advantage. The shoots borne on citrus for the purpose may be dealt with in three groups.

"*1. Fruiting shoots* :— Which are slender, slow growing, generally horizontal or drooping and bear medium to small leaves. It is generally desirable to leave them unpruned for 3 to 4 years after which their fruiting capacity is apt to decline and it becomes desirable to replace them by younger shoots.

"*2. Vegetable shoots*:—which are erect, quick growing and bear larger, coarser leaves. After one or more seasons these normally bear fruit of rather inferior quality near the apex. This causes them to curve downwards and assume a horizontal position and then usually give rise to succession of further vegetative shoots which follow the same course.

"3. *Water shoots* :— which usually arise in the centre of the tree as a result of too drastic or ill-timed pruning. These should be removed as early as possible unless they are required to replace an old branch which has died. In shaping young trees a low stem is nearly always to be preferred to a high one. Hollow spherical form is much to be preferred to an open vase shaped form."*

Crops: — The Nagpur Santra gives two crops during the year. (1) *Ambe bahar*, from February flowering and (2) *Mrig bahar*, from June-July flowering. Attempts should be made to get one main crop from June-July flowering. Besides the good quality of fruits and the better marketing conditions got by this crop, an important point to bear in mind is the prevalence of fruit puncturing insects during the rains. The *Ambe bahar* is apt to suffer heavily from these, while the *Mrig bahar* escapes the onslaught.

16. MOSAMBI

There is practically no difference in the cultivation of *mosambi* and *santra*. They are two close members of one family. *Mosambi* plant does not grow as *santra* plant; hence its plants are spaced at about 18 ft apart.

Mosambies are sold at a higher rate than the santra; hence are more paying. Moreover the mosambi plant is hardier and more disease-resistant than the santra. Mosambi is found to grow well in various places where santra has failed. At present at various parts there is great scope for mosambi planting. A commercial fruit grower should take advantage of it and put more area under mosambi than orange.

Mosambi budded on sweet limes are of better quality. Poona variety is decidedly superior to the Nagpuri one. Malta of Punjab is a variety of mosambi.

17. Grape Fruit

It is very similar to Pommelo. It is named grape-fruit because its fruits are borne in bunches like grapes. This is of a very recent introduction to India.

This fruit is smaller in size than the Pommelo with a slightly bitter taste but

*Abstract contributed by Sangat Singh; Punjab Fruit Journal; April '38.

years old. Sometimes a badly affected tree for some reason or other dies in a few weeks, especially during the hot summer. This is perhaps due to excessive heat which augments the disease and the tree succumbs.

It is also noticed that a badly affected tree will show a tight blackish bark which does not peal off easily. The very look of the tree shows that it has thick-set bark due to lack of proper growth. Such affected trees very often show the round white marks of growing lichens which generally grow in old trees.

In the advanced condition such a tree gives out "Water sprouts" or suckers mostly near the base while the top is dying. This indicates that the tree is trying to maintain its existence by such new shoot growth.

Cause of the "Die back":—There is a prevailing opinion among the workers that the disease is not caused by any fungus or bacteria but is entirely a physiological trouble. Perhaps there is no one particular factor that causes the disease and that is the reason why no specific remedy has been found out to control it. Some of the causes are given below:—

(*a*) *Unsuitable soil:*—A clay or black clayey soil which gets waterlogged easily is a bad land for citrus. The same may be said of *murrom* underlaid with clay.

(*b*) *Waterlogging:*—It is caused by lack of drainage during rains or too much irrigation. Occasionally a thick growth of weeds causes waterlogging by checking the free drainage of water.

(*c*) *Drought:*—Very often trees suffer from lack of water supply, specially in the hot dry weather in summer, when natural water level in the soil goes down to 16' to 20' which is beyond the reach of citrus tree roots, thus causing a lack of "Water balance" in the soil.

(*d*) *Lack of plant food:*—Perhaps malnutrition of trees due to lack of proper plant food is one important factor in bringing down the vitality of the trees, thus causing the disease.

(e) Excessive cuttings of roots by ring system of manuring, which is very common among orange growers is perhaps a cause to weaken the tree.

(*f*) *Lack of proper cultivation and manuring:*—The hardening of the soil near the base causing clodding and cracking is injurious to citrus trees, as it checks aeration and allows the moistnre to escape, both of which are harmful to trees.

(g) *Growth of hardy perennial grass:*—Thick grass growing by the base of the trees will strangle the roots physically and by robbing the available moisture.

(*h*) *Acidity of soil:*—The red soils are mostly acid in character. Moreover, when there is enough organic matter in the soil, the humic acid concentrates, if there is drought, making the plant food unavailable to the roots.

(i) *Alkaline, saline or Kalar soils:*—In E. S. A. and C. P. too much alkaline soil is not known except in Chhuikhadan. Saline soils are rare except in some places in the coastal regions. Both of these soils can be remedied by proper cultivation and treatment.

(j) *Varietal character*:— Some varieties such as mosambi, malta, lemon, lime and sweet lemon are less affected by the "Die back", whereas oranges (Nagpuri) are badly affected. Next to oranges are the limes.

Remedial measures:— As the disease is the result of the cumulative effect of various factors the preventive measures consist of proper attention to (i) Selection of soils and site, (ii) Selection of plants, (iii) Irrigation, (iv) Manuring, (v) Pruning, and (vi) Mulching.

The first five of these have already been dealt with. Mulching may be done as follows :—

(1) *Soil mulch*:— This may be done by light ploughing and harrowing the whole garden after irrigation. The base of the tree may be worked lightly with a sprong hoe so as to keep the soil loose and kill the weeds.

(2) *Organic mulch*:— Dried straw, leaves, and weeds may be put in a radius of 3 feet in the form of a pad to cover the base about one foot away from the trunk of the tree. This will serve as a good mulch. As the place will be wet after irrigation, the white ants, if any, will be on them. But they will not damage the roots. The material will rot and supply humus to the soil.

(3) Old building rubbish serves as a good mulch provided it is available. It may be put all round the tree to cover the soil about three feet radius from the base.

If the presence of Collectotrichum or any other fungus is noticed spraying the orchard with Bordeaux mixture (2-2-50) should be taken up. It is advisable to take Bordeaux mixture spraying as a routine work of the orchard. This will also serve as a remedial measure for canker and other diseases. Bordeaux spraying should be done thrice a year. (i) in the beginning of the rains, (ii) after the close of the monsoons, and (iii) after the winter shower.

Gummosis:—This is another important disease of Citrus. It is caused by various fungi mostly of the germs of Phytophthora.

The main feature of the disease is the exudation of gum from the bark followed by the cracking of the bark. The disease spreads quickly making the trees worthless and kills many of them. The fruits are also affected.

The fungus is soil borne and as a precautionary measure it is suggested:—

(i) Not to bud low on the stock.

(ii) Do not heap soil round the stem.

(iii) Follow ring method of irrigation, thereby avoiding irrigation water to touch the stem.

The disease can be controlled in early stages by scrapping clean the affected part and also upto about two inches of the healthy part all round it. This should then be painted by some fungicide like crude carbolic acid diluted with equal amount of water. Bordeaux mixture paste is also effective.

Fruit Fall:—At times fruits begin to dry on the tree and fall down without fully growing. This is more so in case of lime and lemons. Treat the soil with a weak solution of copper sulphate. This is found to improve the condition.

DAIRYING IN INDIA

By: Rameshwar Nigam

INSPITE of the fact that there is a preponderance of milch cattle in India and milk and milk products form an important part of the diet of vegetarian population, dairying is not taken as a business proposition, because the people who generally take up the work are very poor and it is quite impossible for them to arrange for the three main things which are of the utmost importance for a

the clean delicate flavour and its digestion promoting qualities are making it very popular.

Soil:—Selection of soil is an important factor to get success in its cultivation. A light sandy 'Kachar' with good drainage is the best soil for it. Waterlogged sticky soil is practically useless for its cultivation.

Varieties:—Marsh's seedless, Mc Carthy and Triumph varieties are recommended for trial. They are found to do well on the Government Farm Chhindwara and at other places in the C. P.

Planting:—The planting should be done at 18 to 20 ft. apart. The size of pits should be 3' x 3' x 3' and should be prepared and treated like those for mosambi and orange. The soil mixture for these may be little richer than the one used for orange planting.

Time of Planting:—Beginning of rainy season is the best time for this.

Top dressing:—Give a dose of fertiliser about a seer of cake and ½ lb. of Nicifos or any other such manure soon after the rains. The mixture is repeated in June in its double dose. This amount of fertiliser may be continued to be given like this for about 3 to 4 years when the plants begin to bear. The dose is then increased according to the size and bearing of the plants.

Irrigation:—Irrigate the palnts as below:—

	Winter
1st year—once	in 10 to 15 days
2nd year—once	in 12 to 15 ,,
3rd year—once	in a fortnight.
	Summer
1st year—once	in 6 to 8 days.
2nd year—once	in 8 to 10 ,,
3rd year—Three times in a month.	

And when the plants are fully grown they are irrigated once a month during winter or according to their need and once in three weeks during the summer or at a closer interval if needed.

18. LIME AND LEMON

Lemon and lime are the important members of Citrus family. They are very extensively grown in India. There is confusion in distinguishing these from one another. The following features may be of help to differentiate between lime and lemon.

Lemon:—It has distinct lemon smell and the leaves are cessile and wingless.

Lime:—It has bitter smell and the leaves are winged.

It is a usual sight to find a few plants of these growing in house *'barhies'*. There is no village which does not have a tree or two of these.

Planting:—Planting may be done at about 15 to 20 feet apart. The tree, propagated from seed takes longer time to come to fruits. Plants are hence generally propagated by 'gootee' from a desired tree. While selecting a tree for multiplication look in for a tree that gives fruits of bigger size and the main fruiting season of which is November, December.

Varieties:—There are several varieties of lime and lemon grown in India. *Bijora*, *Kagzi*, Eureca-lemon, sweet lime etc. are worth growing. There is a Barmasia variety which gives fruit all the year round. One plant of this may be grown in the house compound.

As the fruits in India are mostly used for juice and pickles sour varieties and specially the 'Kagzi' is in very great demand.

Pommelo and Zamberi are important members of this group. Pommelo

grown more as a novelty and for sale in the towns. It commends a good sale amongst people of Western taste. There is not much local demand for it. Cultivation of Pommelo is exactly like the grape-fruit.

Zamberi is grown only for raising stocks for orange budding. The juice of Zamberi fruit cannot be used for pickles.

Insect Pests

Lemon butter fly (Papileo demoleus) and orange stem borer (Inderbella quaderinatota) are the two important insect pests of citrus.

Papileo:—Young plants are invariably badly attacked by the caterpillars of lemon butter fly. The caterpillars eat away all the green growth of the plants. "Ordinarily the pest is serious in nurseries and newly planted orchards, but it appears to be capable of causing serious loss to grown up citrus plants as well". (Sontakay)

Caterpillars must be hand-picked and destroyed, as soon as noted, in kerosenised water. This is possible for younger plants but in case of grown up trees the caterpillars should be dislodged by shaking the branches. Start shaking from the central branch and proceed to the outer ones. Shaking should not be done in the case of trees in bloom or with fruits.

Inderbella:—The caterpillar of this insect bores a hole in tree trunk and causes considerable damage to the plants. The insect's holes are noted from the exuding refuse on the bark. The caterpillar remains inside the hole. It can hence be easily gassed to death. Chlorosol is employed for this purpose. A wad of cotton soaked in chlorosol is put in the hole and it is then closed by applying mud on it. The gas given out by the chlorosol is strong enough to kill any insect that is in the hole.

Fruit sucking moth:—During the rainy season considerable damage is done by the orange fruit sucking moth. They puncture the growing fruits which rot and fall down. The attack is more on the *amiya bahar*. *Mrig bahar* practically escapes the damage; hence attempts should be made to get this crop only. Clean cultivation, destruction of host plants and removal of rotting fallen fruits from the orchard check the growth of the pest.

Dieback or Withertip:—The dieback disease is one of the most destructive diseases of oranges. Santra is more susceptible to it. The disease is causing havoc at various places. Well established and fruiting orchards have been ruined by it.

Cause:—It was the belief that the disease is caused by Colletotrichum glaeosposioides. Of late however, there is a growing opinion that the disease is due to various reasons. Attack of Colletotrichum may be noticed on such weak trees.

Symptoms of the disease:—This is a sort of fell disease. Yellowing of leaves mostly on top sometimes combined with variegation or either of them alone indicates the effect on the tree. Gumming is also occasionally found associated with it. A few young shoots become stunted in growth and more angular in shape The leaves yellow mostly right after the rains and may continue for a year and then fall off. Other shoots are also affected gradually. The bare shoots gradually become dry and this continues downwards which has given the name "Die back" to it. It may take 3-6 years or more to completely kill the tree. This happens to the trees when they are in full [illegible] and it may also occur to young tree[illegible]

successful dairy.

Feeding, Breeding, Health and care of cattle are the three items necessary to make dairy industry an economic proposition to the villagers.

Generally it is seen that the people rearing cattle suppose it to be the animal's own lookout to find feed for itself, and this very cause is wholly responsible for the shortage of milk yield due to under-nourishment of the cattle.

A close study of the conditions under which the milk industry is carried on at present will make it clear that the dairying methods suffer from serious defects.

It is a well known and accepted fact that if the breed of the cow is good, it will give more milk in comparison with the other cow which is of no good breed.

It should therefore be our first aim to improve the breed. For the improvement of breed the first step that a Co-operative Society or the Government should take is that it should import stud bulls of good breed from other parts of the country and enforce compulsory castration of all bulls that wander here and there and which in the long run prove harmful in many ways:

Firstly they produce weak and inefficient calves and secondly they increase our fodder problem.

Many are of opinion that there should be foreign breeding bulls but as far as Indian conditions are concerned they are no good, and our farmers are not so rich that they might maintain and feed them as they are fed in the foreign countries, and so in a few months time their health will deteriorate and they will be no better than our own.

Moreover there is no dearth of good breeding bulls in our own country, Sindhi and Hissar bulls being fine specimen, comparing favourably with imported ones in quality and built.

It should therefore be our endeavour to improve our own bulls through the help of Co-operative Breeding Societies maintained by Municipal Boards and other private organizations. The work of the "GO SEVA SANGH" which distributes fine pedigree bulls to prospective farmers is really commendable.

If a man is not fed properly it will be quite impossible for him to work properly so it is also the case with animals; if they are not properly fed they will be un-healthy and it will be useless to expect from these unfed and unhealthy animals good yield of milk.

Proper and nourishing food in adequate quantity is therefore very necessary for the health of the cattle.

We have suggested in the very beginning that useless bulls which take the lion's share of our fodder if turned out from the village or town will leave ample fodder which can be utilized to feed the productive cattle properly.

Besides this, the export of fodder, oil cakes, and cotton seeds should be prohibited by means of Legislation.

Much of the straw to-day is used for the manufacture of paper and card-board which otherwise can increase the supply of fodder for the cattle. Better and cheaper substitutes can be used for the manufacture of paper.

There are other ways also, as green fodder, perennial grass and silage from which we can get enough food for the cattle. The Government should, with

THE RURAL INDIA

Vol. XII, No. 2] FEBRUARY, 1949 [Whole No. 120

SECRETARIAT LIBRARY 1949 MADRAS GOVT.

"Salvation of India lies in Cottages" —*Mahatma Gandhi.*

LET FIGHTERS ON FOOD FRONT MEET

OF the many grave problems facing 'Free India', none is so challenging as the problem of food famine. Food being the most essential need of life, the Government has its primary duty to ensure adequate supply of food to every one of its citizens. Chronic starvation and under-nourishment which have been the lot of the people in our country for the last many years have progressively undermined their physical and moral stamina and made them susceptible to easy temptations.

Political freedom which was thought to be the panacea of the evils of hunger and poverty has in no way brought about improvement in the food situation. It has rather worsened since then. Economic and administrative evils and maladjustments which were expected to disappear with the coming of Freedom have multiplied several fold and production in every sector including food grains has diminished. If food and other primary needs of life of the people are not satisfied by immediate and large-scale increase in production, we are afraid, we expose the country to the inroads of the subversive doctrine of 'Red Revolution', threatening the whole of Asia, including India.

The reports of 'Communist Menace' in Andhra and parts of Hyderabad, as they have appeared in the daily press are sufficiently alarming. Threats of strikes and lockouts in an atmosphere surcharged with discontent, frustration and indiscipline are dangerous symptoms. If nothing else, they are significant pointers to the direction to which the wind is blowing and the Government and the people have reasons to take serious note of the unwanted developments taking place in the country. A timely warning in this connection has already been given by no less a person than Sir Radhakrishnan, in the course of his address at Madras, when he is reported to have said, that, 'Evolution, if it is too slow, often leads to revolution.'

Post-freedom era in India has hardly produced conditions, which may prove slow evolutionary trend of things in the matter of food production. Even a slow process of improvement in the food situation at this critical juncture would have inspired hope and confidence among the people of better and more satisfactory conditions which may follow later on. But the painful and unpleasant fact is that rather than slow upward trend of things, the situation has deteriorated in almost every sector of life including moral, material conditions of the people and the standards of public administration. A fast deteriorating situation leading to widespread misery and want is obviously a standing invitation to the growth of 'Communism'. During the

plenary session of the Congress at Jaipur, this growing menace attracted a good deal of notice of India's Prime Minister and other leaders. And Mr. Kaleshwar Rao, Andhra leader, has issued an authoritative statement to the Press, telling how distressing and woeful a situation has been created by this 'Red Menace' in his home province of Andhra. His statement in part reads:—

"The Communist Party of India has always been claiming Andhra as their greatest stronghold in India. Vijayavada is their Moscow. During World War II after Russia became an ally of Great Britain, they organized themselves well and spread from the Andhra districts of Madras Province into the adjoining districts of Telangana of Hyderabad State as they got encouragement and support both from the British Government and from the Nizam's Government."

"After the Congress took up office in Madras in May 1946, the Communists have systematically organized prolonged and large-scale railway and labour strikes and agrarian troubles throughout Madras province and tried to dislocate the Congress administration. A Public Safety Ordinance, then a Public Safety Act and an amending Act making it yet more rigorous, had to be passed and enforced by the Madras Government to suppress Communist disorders."

"The Communists are particularly strong in the districts of Nalgonda, Warangal, Kareemnagar and Athraf Balda in Telangana. In large parts of these districts administration is paralysed in villages. The village *patels* and *patwaris* are afraid to resume normal administrative duties owing to Communist terror, and the refugees who had fled away from the villages into the Indian Union during the period of the people's struggle are afraid of returning home."

"There is accumulating evidence that the terrorist methods resorted to by the Communists included murder and such unheard of atrocities as cutting off of an ear or nose and plucking out one's eye balls. The measure of success achieved by the Communists as a result of such cruel deeds is revealed in the large-scale seizure of land and its arbitrary distribution as well as in the establishment of what are called "Praja courts" which awarded punishments like execution and torture to their victims. In Nalgonda and Warangal districts about 200 persons, including Congress workers, were supposed to have been murdered."

That is the 'Red Terror', which has already started raising its head in parts of India itself. The Central Government has been approached to take the situation in their hands and put down this murderous gang by strong military action. The Communist victory in China and the challenge thrown by them to the Government of Burma are significant indications, which, if not given heed in time, will put our newly won freedom in jeopardy. That is an open challenge of the coming events, which India can ignore only at the peril to its freedom and ignominy to the generation which holds the responsibility to safeguard it. While laying down reigns of administration of China, Generalissimo Chiang Kai-Shek had to repent for his folly in the words "I have committed many blunders in the last ten years, but the worst was my tolerance of China's communists during the war with Japan". India has a lesson to learn from the mistake of China.

Suppression of the terrorist gang by strong military action and/or banning of the organisation are at best temporary cures of the malady which afflicts the country. The permanent cure is that the causes which breed Communism should be eradicated by planned and concerted action of the state root and branch. If the causes are allowed to grow as they had developed in China and of which there are perceptible indications in India as well, the present remedies are bound to prove ineffective and India may have to regret for the lost opportunity in the pathetic words of the Generalissimo of China. We pray, that the Government of India and the Indian people may be blessed with wisdom and statesmanship to do the right thing while there is yet time.

Speaking on this imminent danger threatening India's freedom, Shri S. K. Patil, member of the Working Committee of the Congress while addressing the Maharashtra Club in New Delhi, drew the attention of the country to make timely effort to avert the growing menace and declared:—

"Strong currents of Fascist and Communist tendencies blowing across the ocean of the Indian Politics threaten to develop into a tornado and founder the ship of Indian freedom. The tragedy will transcend human imagination and control if no timely effort is made to avert it."

If India was saved of this danger it was due to the towering personality of Mahatma Gandhi in our midst. We may yet be safe so long as Pandit Nehru and Sardar Patel control the destinies of this country. But permanent health to the body politics of India would be only ensured by completely removing the causes of the present hunger and misery of the masses. The people have no meaning of Swaraj, if it is not 'Ram Rajya' at the same time, providing them conditions of plenty and prosperity which they have been taught to associate with it all these years of fight for freedom.

Communism thrives on the miseries of people and the only way to counteract its spread effectively is to bring about improvement in the living conditions of the people. The problem of plentiful supply of food and enough of clothing, therefore, assumes first rate national importance, if India is to be saved from the Communist upsurge.

During our long study tours in the south and particularly in the tract nicknamed as the Moscow of the Indian Communists namely Vijayavada, we have ourselves witnessed harrowing conditions of human misery. The same pitiable picture of misery with only slight local variation was repeated in and around Calcutta and the countryside in Bengal. There were crowds and trains full of half-naked and ill-fed human skeletons with nothing but dispondent look in their eyes. The food that they were seen eating was unfit for human consumption. It is only natural that armies of beggars roam about in these poverty-stricken areas and they are a standing nuisance to a north Indian visitor. In one of the villages of Bengal, it was revealed on enquiry that 40% of its population was not getting a second meal before going to bed in the night. While travelling by train between Madras and Vijayavada, one is invariably reminded of the privations, not only in the matter of food supply but also in the absence of facilities for good drinking water, under which people live day in and day out in that area. And what wonder is, if such a place of privation and misery ultimately becomes the Moscow of the Indian Communists.

Except certain areas in the South and Bengal and the labour population working in mills, factories and railways, vast majority of population of India including agricultural masses have not been so far touched by the Communist influences. The intelligentsia and the best brain of the country abhor the doctrine and still more abhor the methods and practices employed by the 'Reds' to achieve their ends. If food-famine and atmosphere of want and frustration which stalk the land at the moment can be removed by countrywide 'Production Drive' of food grains and other commodities of life, India can certainly avert the Communist danger. Sardar Patel, in the course of his address at Baroda, hinted at

the looming danger and advised the people in most solemn tones:—

"We must produce more food grains and make the fullest use of the available hands. We must make the country self-sufficient in the matter of food and cloth. If we do not, people will die of starvation. We must help each other and cooperate with Government in preventing deaths and put in our best efforts to produce more and save our people in time. Otherwise, we will come to grief."

A statement of this nature coming from one of the two topmost leaders and administrators in the Government of India, if implemented leaves nothing more to be desired. But the problem is who is to organise this total effort and put all the available hands for producing food and cloth. It is not within the competence of private individuals or public institutions to organise production of six million tons of food required for the current year 1949 and produce conditions of food self-sufficiency in the country.

A total effort or 'Production Drive' on a nation-wide scale can be launched only by the Government. Where is the Government plan to produce necessary food stuff within the country and ensure national self-sufficiency? Have the Government taken steps to implement the plan and set up an adequate machinery in men, money and equipment? What has been the result of such an effort? Whether the failure to produce adequate results is due to the absence of Government plan and its effective execution or for want of public cooperation? These are some of the very pertinent questions agitating public mind in the matter of tackling food problem.

We have drawn attention of the Government in these columns to state its position in the interest of public information and confidence. It is a matter of deep regret to us that while the whole country is on the brink of starvation and there are possible apprehensions of the repetition of the Bengal tragedy on a much larger scale, the Government has not so far stated its position in the matter of such vital importance as food and the people have been left in the dark to draw their own conclusions. The inevitable conclusion one may draw under the circumstances is that either the Government have no plan and/or they have no means to put it into operation. In either case, it does not add to the efficiency of the Government.

The test of efficiency of a Government is that its plans and policies must of necessity bear co-relation with their effective execution. But the tragedy of the present Indian situation is that this test is mostly followed by us in its breach rather than in its observance. While we aim at food self-sufficiency by organised effort of the nation we produce results which only increase our deficits. And contrary to what we aim to achieve by our labour and effort in the country, we have been increasing foreign imports of food grains year after year. Last year our total imports of food grains were less than three million tons. In the present year, the Government have already made arrangements with foreign countries to import four and a half million tons of food stuff. Strange as it may look but the fact remains that food situation in the year 1949 is more difficult and grave than what it was in the year 1948.

A stage has definitely reached when we must cry halt to this dangerous drift and the people must join hands together in one mighty effort to increase produc-

tion. Food deficiency is not confined to certain areas alone as is mistakenly believed. It is an all India problem and embraces almost every village. There is no such an area as a surplus Province, State, District or Taluka. With just an exception here and there almost every village in India suffers from food deficiency. This is what is revealed to us as a result of agricultural census taken by us in this area of Pohri (Madhya Bharat), which to all intents and purposes is known to be a surplus area. It is sheer ignorance of the people which is responsible for this much advertised food-surplus notion.

We doubt, if anybody ever took stock of the aggregate production of food and distributed it over the entire population of a village giving four and a half maunds per year per head of population. For ages, rich and the well-to-do classes including the middle class people always got more than their legitimate share of food and other needs of life, while the labourers and the poor producing masses practically lived a half-starved and half naked existence. This inequity of distribution between have's and have-not's is primarily responsible for the mistaken middle class notion of food surplus which on an accurate investigation in any area would prove to be a myth rather than a reality. The simple fact responsible for the present food shortage is that while in the course of last half of a century the population of the country and therefore of every village has almost doubled, the production of food has either remained stationary or has only registered a small increase which is altogether insufficient for the vast increase of population.

Our recent investigations have further established the fact that for the immediate object of attaining food-self-sufficiency for the present population, we need not go in search of new lands for cultivation. The present area under cultivation if taken proper care of and improved on the lines already known and recognised by the cultivators is capable of giving about 100% more production. Through neglect and improper use of the soil the fertility of the land in our country has reduced to its lowest. All that is required to be done is to awaken the interest of the producer in the good care and improvement of his lands.

We have vast potentialities of increasing food production from the lands already under cultivation, while our food shortage is only 10% of what we already produce. Since, almost every village is a food-deficit village, this problem should best be tackled by a country-wide programme of intensive cultivation and regional food-self-sufficiency in each and if possible in every village.

The food problem of the country at such a critical stage cannot and should not be the exclusive concern of the Government. It is a question of life and honour to every citizan of free India, and he should feel concerned about it. Constructive workers, officials of food, agriculture and other allied nation-building departments, Congress leaders and enlightened public who are all interested in the problem have a special duty to discharge at this juncture. The time has come when they should all stir about, meet together, discuss and devise ways and means and give the 'Food Production Campaign' a nation-wide drive. Critical food situation in the country demands that public workers and other intellectual and privileged classes should come for-

The Committee will be competent to sanction all items of work up to a limit of Rs. 1,000 in each case.

The District Development Committees will consist of all the Chairmen of the Taluk Committees, five Depressed Class representatives and five other members, with a non-official Chairman, all of whom will be nominated by the Government. The District Development Officer will be the Secretary of this Committee. The Chairman of the Committee will be paid an honorarium of Rs. 100 per mensem and the members will be paid travelling allowance and dearness allowance admissible to members of the District Board for every meeting attended by them.

The Deputy Commissioner will be the chief co-ordinating authority in the district. He will have full disciplinary control over the Rural Development Officer and the Development staff working in the district. The Deputy Commissioner may attend the meetings of the District Development Committee either on his own initiative or at the request of the Chairman. He will be responsible for the supervision of the progress of works undertaken by the Development staff in the district, for the audit of accounts and for due scrutiny of expenditure incurred out of Rural Development Fund. The District Development Committees will be empowered to sanction all development works estimated to cost from 1,000 to Rs. 5,000 under each item in the district. They will have power also to approve the programme of development works formulated by the Taluk Development Committees.

The Central Development Committee which will have as its Chairman one of the Ministers of Government, will consist of the Chairmen of the District Development Committees, Heads of all Development Departments, five Depressed Class representatives and five other members to be nominated by Government.

The Central Development Committee, in co-ordination with the Depressed Class Policy Committee, will deal with all matters relating to rural development, including the work relating to the uplift of Depressed Classes at the State level and see to their execution; and will exercise general supervision and control over the work of the District and Taluk Development Committees. This Central Committee will be competent to sanction all expenditure out of the Rural Development Fund in excess of Rs. 5,000 upto Rs. 15,000 in each case, subject to the provision in the Budget."

The scheme is an improvement over the previous one and will help in improving rural conditions. All the same, the reorganised scheme too betrays old and out-moded welfare mentality of Mysore Administration in the matter of rural development and does not show dynamic conception for all-sided reconstruction of rural life on a planned and scientific basis. We fail to understand how a Revenue Inspector besides performing his duties of revenue collection could also at the same time take up intensive work of all-sided Rural Reconstruction in about 25 to 30 villages under his jurisdiction, which area needs devoted labours of 25 to 30 workers if development programme has to be made intensive and capable of producing satisfactory results. It is inconceivable how a single worker can successfully discharge the two functions satisfactorily and bring about noticeable improvement in about 30 villages except that he may be doing some sort of make-belief development work as he has continued to do hitherto.

TOWARDS A PROGRAMME OF FOOD SUFFICIENCY

By: Prof. N. G. Ranga

PEOPLES everywhere in the world desire, above all, six satisfactions—food, clothing, housing, education, leisure and happiness—apart from their political and social freedoms and opportunities.

That these needs are all interdependent and contribute in a cumulative manner to the total satisfaction of human beings is a fact which is not generally recognized. No one who is not fed or clothed or housed properly can possibly consider the unemployed time hanging on his hands to be leisure nor can he seek to obtain either education or culture, to say nothing of happiness.

Conversely, whoever is not happy or educated or cultured can only make a very inefficient toiler and can, therefore, contribute much less towards the total national income from out of which his quota of food, clothing and housing can be derived. A sound mind in a sound body and a sound body with a sound mind are necessary if the productive capacity of our nation is to reach its maximum, and without that it is impossible for any nation fully to feed, clothe, house and educate its people.

Basically, food, clothing and housing are the very first to be achieved, by every nation and by all people.

Except in America, Switzerland, Canada, Australia and New Zealand, Sweden and Denmark, everywhere else the people of the world are finding it very difficult to satisfy their hunger, not to speak of obtaining their other satisfactions. And how can any people attain the maximum amount of happiness unless they are fed fully and satisfactorily? To-day hunger has spread almost all over the world and to appease it is the greatest need of the hour. Whoever can contribute towards the minimization of this hunger that is stalking the world is, indeed, a saviour of the world.

But the hundreds of millions of peasants and farmers who make the biggest contribution towards the satisfaction of people's needs for food and clothing are not given a thought by the statesmen and the urban populations in most of the countries. That is the irony of the present-day social dispensation.

As everyone knows, there is an overall deficit in food production in the whole world. Although the Food and Agriculture Organization and the U.N.R.R.A. authorities hope for world self-sufficiency in food by 1951, we seem to be nowhere near the fulfilment of their hopes because of various bottlenecks such as manures, fertilizers, agricultural implements and machinery, transport, seeds and processing industries.

How has this overall food deficit come to be experienced? Surely there is more land under food crops today than in 1938. The levels of agricultural efficiency have certainly gone up in the major agricultural export countries. There is no dearth of labour so far as agriculture is concerned. Since the end of the war, international transport has been forthcoming. Why then this deficit? Because the world's population is growing while the fertilizer situation has considerably worsened and people have not been provided with the necessary facilities for diversifying the contents of their diet and thus minimizing their demand for cereals.

ward and offer their services to the solution of this pressing national problem. Young men and women from colleges and High Schools should be conscripted for food production service in the villages and given initial training to guide the villagers. In short, the Movement of food production should be broadbased on the popular enthusiasm and active interest of the people to make it produce tangible and definite results.

In order to meet the challenge of the revolutionary forces which are threatening to undermine our newly acquired freedom, the Adarsh Seva Sangha has decided to call the first All-India Food Production Conference in the third week of April next. This All-India Conference of food workers and promoters will be an occasion to all constructive elements in the country to come together, discuss and devise measures and give vigorous direction to the solution of the country's food problem. That this Conference is to be presided over by the Food and Agriculture Minister of the Government of India lends both weight and importance to the conclusions of such a gathering.

NOTES

PANDIT NEHRU ON THE DEVELOPMENT OF HUMAN QUALITY

Addressing the University students at Bangalore, Pandit Nehru advised the young men to eschew all petty ambitions of political leadership and personal advancement and dedicate themselves to build India of the future. To the future builders of this country, he has rightly stressed the necessity of developing breadth of vision and higher type of ambition rather than a narrow and personal one. 'India will be great or small in proportion to the quality of men who take to build it', said Pandit Nehru and averred:—

"If you and I and all of us become small people then India herself will become small in spite of its length and breadth and hundreds of millions of its inhabitants. Numbers and size do not make a country great. It is the quality of the human beings that makes a country great."

"However small we were, we in a measure became greater and bigger of stature. For, the cause you are allied to, casts its reflections and its glory on you too. Therefore if you think in big terms now of the future of India, not only will you be able to serve India better, but you will be able to serve yourselves better and you will be better and bigger than you are.

"It is for this reason that wherever I go I repeat that we must get out of narrowness of vision that has come how descended on many of our people. Whether you call it communalism or provincialism or religious antipathy or whatever you like, if we do not get rid of this, not only will they weaken us but they will divert us from the great things of life. They will confine and constrict us and make us small men."

"We have seen countries very small in size and yet shining in history. We have seen great continents lie supinely doing nothing at all, or doing trivial things under the domination of others. So it is quality that counts—quality of the individual and quality of the group."

Under the leadership of the great Nehru, India has already risen in its stature and has assumed the role of leadership of Asia. There are very clear indications on the horizon that Delhi in the near future may become the political capital of the entire Asian continent. India has already begun to play a vital role in the affairs of the United Nations and world politics. So great a Destiny as that awaits young men and women of India. Let us hope and pray that they

prove themselves worthy of this great heritage which is theirs.

TRAINING RURAL WORKERS FOR FOOD PRODUCTION

Elsewhere in this issue, we are publishing the prospectus of the Rural Workers' Training Institute, Pohri, Madhya Bharat for information and guidance of constructive workers and others, who desire to receive training in the science and technique of 'Village service'. The period of training is of one year and commences from the 15th of April 1949. Candidates desiring admission should either be graduates of Indian Universities or possess equivalent qualifications.

The immediate object of the Institute is to turn out largest number of workers specially trained to take up intensive programme of food production in the country. Central, Provincial and Union Governments may avail the services of the Institute and get their officers and workers trained to intensify 'Food Production Campaign' in the country.

REORGANISED SCHEME OF RURAL DEVELOPMENT IN MYSORE

The Government of Mysore have reorganised their scheme of Rural Development and sanctioned an extra yearly amount of Rs. 3.95 lakhs towards its finances. The scheme will be executed through the Central, District and Taluka Committees to be reconstituted for the purpose all over the State and presided over in every case by a non-official chairman. The functions and powers of the committees as explained by the Government Communique are:—

"(1) Control and supervision over the working of existing Rural Welfare Centres and those to be started, (2) to set up a Rural Statistical Department for collecting data on all questions relating to rural areas, (3) to initiate special schemes of rural development like rural housing, communications etc. of State-wide interest, (4) the Committee will have as one of its functions the starting of a Central Rural Library in the State and take up the work now done by the State Adult Education Council.

The other functions relate to powers of (1) Rural improvement hitherto exercised by Revenue Inspectors; (2) the appointment of Revenue Inspectors with reduced jurisdiction to attend to Revenue as well as rural development work in an area comprising 25 to 30 villages so that intensive work could be carried on with greater promptitude and efficiency; (3) the appointment of Special Revenue Inspectors in each taluk to assist the Amildar and to look after mainly acquisitions and other works relating to Depressed Class uplift; (4) the transfer of administrative work relating to the amelioration of the condition of the Depressed Classes from the Revenue Commissioner to the Commissioner for Rural Development (who will in future have the status of a Head of a Department); and (5) the constitution of a Fund called "Rural Development Fund".

The Taluk Development Committee will consist of 10 members, of whom not less than one will be drawn from each hobli, with two Depressed Class members, presided over by a non-official Chairman, all of whom will be nominated by the Government. All Representative Assembly members, representing various interests and residing in the taluk, will be *ex-officio* members of the Committee. The Amildar (Tahsildar) of the taluk will be the Chief Executive Officer of the Committee and also its Secretary. The Committee can sanction and carry out *all improvement works*, to be financed from grants now shown under assignments to Village Panchayats, Rural Water Supply, Inter-village Communications, and Amelioration of the condition of Depressed Classes, subject to general approval of the programme of work for the year by the District Development Committee. The Committee can organise and carry on rural publicity and propaganda, organise agricultural demonstration farms, establish and maintain literacy and adult education classes, revive folk arts, organise and assist in the running of co-operative societies, etc. With the approval of Government, the Taluk Committees may take up the management of minor Mazrai institutions and also the management and control of Gomal lands and village forests.

the serious nature of the underfeeding and malnutrition and consequent low-productive capacity of our masses.

Nutrition experts have estimated that an average adult in India needs at least an allowance of 16 oz. per day while one who is subject to heavy physical labour, such as an agricultural worker or mechanic, needs more. But in November 1947, our Government could afford a ration of only 12 oz. in most of the provinces, while in West Bengal, Bihar and East Punjab only 10 oz. was made available, Madras coming down to 8 oz. for the same month.

It will not be a good policy for our people to develop habits of eating non-vegetarian food, because we cannot afford a non-vegetarian diet. Nutrition experts have now discovered, what our ancients had realized, that it takes as much world's creative effort to produce one calorie of non-vegetarian food as seven calories of vegetarian food and, therefore, we can maintain seven vegetarians with the same quantity of caloric values needed to feed one non-vegetarian.

The total production of rice in India has varied from 250 lakh tons to 274 lakh tons between 1938 and 1946-47. Therefore, we can take it that India's normal production of rice cannot be more than 260 lakh tons after making allowances for vicissitudes of seasons unless the area under rice goes up considerably. The rice production in South-East is much behind the increase in the rice-eating population. Therefore, there is always the danger of India's shortage in rice supplies growing more serious unless prices of rice are kept in harmony with those of wheat. The Food Grains Policy Committee has had to complain of the failure of Government to remove the disparity in prices in favour of rice.

If only we can construct at an early date all the grain stores and elevators in such a way as to prevent the loss of grain through rats, rains and humidity, etc., we can come very near to self-sufficiency in food, because we are now losing 20 lakh tons through bad storage alone. If in addition our Provincial and Central Governments can only inspire our agricultural scientists and provide them with adequate funds to develop the most effective, economical and easily practicable methods of fighting pests and also developing such varieties of wheat and rice and millets which can resist rust, drought, floods and salinity, we can indeed hope to become more than self-sufficient even with the present acreage under food crops and the prevailing methods of cultivation.

With the abolition of the zamindari system, Government will soon be able to take under its own control a few lakhs of acres of undeveloped but cultivable lands. To experiment with methods of large-scale mechanized cultivation, the State may have to set up a suitable public utility combine.

The development of fruit-gardens and orchards is another big possibility available to us and we must make a nation-wide effort in this direction. The road margins, canal banks and tank bunds and certain portions of grazing areas and certain forest lands can be utilized for this purpose. We can thereby raise not only the total quantity of food but also its nutrient qualities and thus protect our people from both hunger and malnutritional diseases.

India has long been dependent upon imports to feed her people. She used to

import 21 lakh tons of rice in 1939-40 and had to get 22 lakh tons of all grains in 1946. Thus, all that the "Grow More Food" Campaign could do was to provide additional food grains needed by the increase in population during the war-period.

Every committee that has so far been appointed by Government has warned us against the danger of this growing dependence upon imports for our food and has therefore recommended to Government to take emergent steps to attain self-sufficiency. In harmony with the general aim to attain world self-sufficiency by 1951, the Indian Government too has accepted the policy of attaining self-sufficiency in food in five or ten years.

Already three years have been lost, but little progress has been made. During the last two years, Pandit Nehru and other Ministers have been assuring our people that every possible irrigation and flood-control project would be developed to this end and that money would be no bottleneck at all. The country has been encouraged to hope that besides the production of nine million k. w. of hydro-electric energy to be added to the existing half a million, as much as 270 lakhs of acres of new irrigation would be added to the existing 480 lakhs of acres. But the inflation scare has bitten our Government and it has already begun to postpone the development or the initiation of these projects. This is, indeed, a national calamity, for every year's postponement only increases India's dependence upon food imports.

It is as well for us to realize that no country can feel sure of its national security which is dependent upon food imports. It is to some extent fortunate that the democratically inclined countries like the United States, Canada, Australia and New Zealand are the most important food-export countries. Even then, India's political freedom can mean very little if we are to be so largely dependent upon them. Moreover, rice can be had only from the South-East Asiatic countries. Owing to the unsettled political and economic conditions of these countries, India cannot expect them to export even half the rice she wants within the next five or 10 years. In the meanwhile, we will be forced to import the less desirable wheat and maize to make up the deficit and thus waste quite a good portion of it by bad usage.

Is there no way out of this dead end? In the short run, at least, there is the possibility of a more equitable distribution of our available food supplies. But Government as well as the urban public and the Governments at the Centre and in the provinces must be prepared to reorientate their attitude towards the peasants, merchants and consumers.

First of all, price-levels must be fixed in consultation with and in relation to actual costs of cultivation.

Secondly, not more than 75 per cent of the ascertainable saleable surplus production of food grains should be compulsorily procured at attractive prices, the remainder being left with the peasants to be sold through their co-operatives in the open market.

Thirdly, the State ought not to undertake the responsibility of supplying rations to the higher income groups, except in towns in deficit areas and urban rationing should be introduced only in those towns where the local population demands it.

Fourthly, railway, road and canal transport must be better co-ordinated and grain storage facilities improved.

Fifthly, the producers and consumers have to be associated through fully representative food or distribution councils with the control authorities to maximize public co-operation.

—Hindustan Times

The Hot Springs Conference was convened in 1943 by the U. N. because at the time it was feared by all the farmers as well as statesmen that the farmers of the world might be faced by as great a depression as that of 1925-35 with a precipitate fall in the markets for food grains. It was then declared to the world by nutrition experts that the peoples of the world, who were seriously underfed in most parts and certainly underfed in other parts, would need twice as much food as before the war, if both quantity and quality are taken into consideration.

But what we find, especially in Asiatic and African countries, is that very little effort has been made by their respective Governments and peoples to develop the production of such protective foods as can augment the quality of food and as can also economize the area on which it can be grown. The production of fruits, their preservation and processing, the culture of fish, utilization of sea weeds, soyabean and tapioka and oil-seeds—all these have been neglected.

If in Asia and Africa these food products which will serve as protective foods can only be produced according to plan, in gardens and orchards as they are being produced in California, it will be possible to feed the population of these countries and feed them better with much less land under food crops. Because it is a well-known fact that an acre under fruit yields four to six times as much fruit of food value as cereals and the use of fruit in food protects the people from many a disease and disability. Fish too can provide a very good substitute for a larger quantity of cereals. The production of honey does not need any land at all. The utilization of sea-weeds for food purposes and inland waterways can also augment our total food supplies.

To appease the hunger of our people and indeed of the masses of the world, is not the sole responsibility of our country or that of any one country. It is a world responsibility. At long last the Western statesmen, led by the late President Roosevelt and Mr. Wendell Willkie, have recognized the undeniable fact that the world being one, it is indivisible in its prosperity and poverty, hunger and thirst, fear and happiness. It is because of this realization that the F. A. O. and U. N. R. R. A. and various other regional organizations have been brought into existence during the last five years. And through the U.N.R.R.A. and its successor, much valuable assistance has been rendered by the American people and Government, to the suffering victims of the war and the famished people of Europe.

But so far this far-sighted altruism of the Americans has been extended only to Europe and has not reached either Africa or Asia. Their statesmanlike assistance is needed most by the undernourished and underclothed peoples of these two continents. These underprivileged peoples number easily 600 millions and they are today left to suffer bitterly from the pangs of hunger. Is it wise for the world to allow hunger to stalk these continents?

It is because of their realization of this fact that hunger in Europe is likely to strengthen the hold of the Communist Party and help Soviet Russia to spread her tentacles that the Americans have rushed to the rescue of Western Europe. Should they not realize the unwisdom, for the same reasons, of neglecting Asia and Africa?

Actually they have so far failed to show even ordinary humanity; indeed, they have displayed a contrary spirit by demanding black-market prices for their food grains and by refusing to accept the world food producers' proposal to stabilize food prices.

It is high time that the F.A.O. and the U.N. realize their responsibilities towards the under-privileged masses and see that all the surplus food production of the New World is placed at the disposal of our peoples at less than cost price, in order to implement their own declaration of faith in One World.

We insist upon equitable distribution of food grains as between different countries and continents and we oppose any wanton destruction or misuse on any large scale of any food grain by any country solely for the purpose of keeping up world or domestic prices or because the poorer countries are unable to pay such prices as are considered remunerative and reasonable by the producing countries.

It is the right of all hungry people all over the world to insist that once food grains are produced they should not be destroyed or misused and that the payment of reasonable and remunerative prices to producers are the responsibilities of the whole world and not merely that of the poorer consumers. Therefore, the F.A.O., the proposed World Food Board and the U. N. and its World Bank must devise ways and means to achieve these results.

Fortunately, these are the objectives for which the F.A.O. has been established. But so far Argentina has not abandoned her profiteering policies nor has the United States accepted the World Wheat Agreement which paves the way towards the establishment of the World Food Board. Australia is still making us bleed for her wheat exports and therefore the World Emergency Food Council is as yet unable even to take the first steps towards the implementation of this programme. Therefore, it is futile for us to expect any material assistance from the rest of the world by way of a more equitable and statesmanlike distribution of the world's food supplies.

There is thus no escape from the necessity to make the best use of our own lands, labour and other available resources. Everyone admits that there is much scope for improvement. But it is in the actual process of achieving this desired improvement that we are failing very miserably. Why?

Because we do not make the maximum use of our cow-dung manure and green and other organic manure. We are not protecting our soils, far from enriching them. We do not take adequate conservancy measures, nor do we put to the maximum use our water resources. We are yet at the initial stages of developing the drying, refrigerating and other processes of preservation of our food products. Indeed, we have yet to begin to improve the general standards of efficiency and knowledge of scientific agriculture among our kisan masses. But improvement in all these directions can only be a long-term process.

It is notorious how poor are Indian diets in variety and nutritional contents. A variegated diet of the same proportion yields greater nutritional values and better taste than the cereal diet to which our masses are condemned. When such a monotonous and unvaried diet is reduced to such sub-human sizes, one can imagine

AGRICULTURAL CREDIT IN INDIA

By: Maheshchand

The Problem of agricultural credit in India, as also in other countries, has two aspects. Firstly, it concerns the credit taken in the past and the amount that has to be still repaid on that account; secondly, the provision of better credit facilities in future.

Credit is as essential for agriculture as for trade and industries. The cultivator requires it for buying livestock, implements and fertilisers, for improving the land, for meeting the current working expenses, for carrying on production in bad years, for holding up sales in good years and sometimes even for complying with State regulations regarding agricultural production and produce-markets.

Credit for agriculture may be of three types. In some cases, the financial aid cannot be expected to be returned due to gross inability of the agriculturist. In other cases, a partial repayment of the credit may be had with the probability that such provision shall improve the borrower's capacity to repay loans. In still others, the loan is to result in the repayment of the principal as well as a fair interest.

Greater stress is generally laid on the provision of the third type of credit. It is so, not only in India but in other countries too. The fact, however, is that in order to rehabilitate the economy of many an agriculturist, finances of the first two types are also needed. Credit for supply of improved varieties of seed is an example of the first type. Agriculturists may be given new variety of seeds free of charge provided they agree to grow them in their fields. Credit for the construction of godowns for the storage of seed, produce and even manure, may be cited as an example of the second type. A part of such credit must not be expected back; a part, however, may be as a loan repayable slowly over a number of years. The availability of storage facility in the rural areas and in the important markets helps the agriculturist to adjust supply to demand and thus get a better price. Greater price in turn tends to increase the income and hence, the repaying capacity.

Credit of the first two types has generally to be provided by the State. Ordinarily the term "Credit" is not considered to indicate such credit. It is understood to stand for financial help which has to be repaid, generally with some interest. In the rest of this chapter "rural credit" will be taken in this sense. As such, it has some distinctive features.

Characteristic Features

Rural credit has certain characteristic features because of the difference between agriculture, and trade and industry. Agriculture differs from the other group in regard to (1) the nature and length of the operations and also (2) the rate of yield on the invested capital It is to a large extent dependent on the vagaries of the monsoon and does not involve mere mechanical transportation of raw material according to a regular process. The commodities are highly perishable* and the system cannot be

* All agricultural products are not highly perishable. Even some of the food products cannot really be called perishable. It is possible to argue that barley and other grains have been found well preserved in some of the ancient tombs. But those methods are not likely to be available with ordinary cultivator. Also, it may be said that the cultivator usually does not keep the old produce when the new crop is ready because of shortage of store capacity.

altered easily and quickly. Consideration must also be had of the fact that partly due to habit and partly due to the uncertainties, the agriculturist is not in a position to forecast his credit requirements sufficiently before the time he actually requires it.

Agricultural credit must be for a period (1) corresponding to the period of cultivation in the case of working expenses, (2) extending to a few years for the purchase of bullocks, implements etc., and (3)extending to a long term for the purchase of land, for making permanent improvements in land, for sinking a well, etc. Apart from this, the criteria of an ideal agricultural credit agency may be put down as follows:—

1. Availability of credit at all times and without delay.

2. Possibility of the extension of the term of the credit in case of crop-failure.

3. Flexibility of the sources of credit of the credit agency.

4. Ability to find out full facts about the borrower readily.

5. Control to ensure the correct use of loan.

6. Strict realisation of the dues at the right moment, through the sale of the borrower's produce or as soon as money reaches his hand.

The commercial banks do not provide such credit. They are able to invest their funds in other, and more profitable channels provided by trade and industry. Nay, their activities have been adapted to the needs of trade and industry. Their apathy is also due to the difficulty of assessing the borrower's solvency, inability of the borrowers to furnish adequate guarantee and mortgage, uncertainty of the return of principal and interest in time and the danger of ultimately being left with unrealisable frozen assets.

Hence there is a necessity for special types of institutions to provide agricultural credit. These should be as local as possible.

Sources of Credit

The agencies which provide agricultural credit in India are:—

1. Indigenous moneylenders including even the Zamindars, tenants and the Pathans.[1]

2. Cooperative societies including credit societies, land mortgage banks, marketing societies and even the growers' societies.

3. Banks including the Reserve Bank of India.

4. The State.

All these sources stand criticised: yet, some or all of these have to be reformed or remodelled and used for providing future agricultural credit. It cannot, however be said howmuch agricultural credit has to be provided. The targets in regard to the various types of credit are indefinite because of atleast two factors. Firstly, cost of production budgets of the agriculturists are not available. Secondly, the amount and

1. The Pathan is a growing menace not only in the rural but also in the urban areas, where even high officials are known to be his clients. He is more ready to lend money than the Mahajan and the Sowcar. He is most gentle and accommodating except when he comes to realise the dues. True, his rate of interest may be upto two annas per rupee per month deducted in advance. At the same time it cannot be ignored that his realisations are not in full. They may be upto 50 % according to one estimate.

POPULATION CONTROL—AN URGENT PROBLEM

By: Rao Bahadur Sir T. S. Venkatraman

OF equal importance with the urgent need for increased food production in the country is the necessity to control and canalise the enormous population increase. Certain events that have occurred within the last three years point to the urgent need for endeavours in this direction.

The political independence which was recently achieved has uncovered the sad dependence of India on imports from outside even in the matter of food. With the Government of the country in our own hands there is no outside agency on which to conveniently shift the blame for our troubles. While it is true that certain of these have resulted from the previous administration—which naturally had other objects in view besides the interests of the country—the opportunity is now before the nation to rectify past mistakes and forge reforms to enable the country to stand comparison with the other countries in the now rapidly changing world.

It should not be necessary to-day to justify birth control measures on ethical grounds. To summarise the arguments in the briefest manner, it may be stated that, if birth control measures constitute an ethical sin, every delayed marriage is in the same category. But for past ideologies, which were efficient adaptations to a different and, in some respects, opposite set of conditions, advocacy of birth control would need no arguments. As an outstanding example of the manner in which a great nation of the west has been rapidly adjusting its ideologies to changed conditions mention may be made of recent events in England. No one can doubt, in England or elsewhere, of the great services rendered by Mr. Winston Churchill in fighting and defeating fascism; yet that great nation placed on the shelves such a great personality with the onset of changed conditions after the second World War. Again, very few who knew the mentality of the Britisher in the pre-war world would have hoped that they would so easily and gracefully part with India—the greatest treasure of their proud Empire as they did last year.

Any agriculturist or gardener would readily concede that it is more sensible to sow fewer seeds and raise seedlings at fair distances from one another than to suffocate the seed beds with an enormous number of young plants. In the latter case most of the young plants die in their early stages of growth on account of the limitations resulting from overcrowding. There is a great need to-day in India, as elsewhere, to apply to human endeavours lessons derived from wide biological studies.

Till recently men have been largely controlling and guiding social and Government policies. Fortunately, the woman is rightly coming into her own—perhaps more so in our country than elsewhere—and both Government and the public should realise this. At the last session of the All-India Women's Conference at Madras there was an unmistakable cry for "Controlled Parenthood". After all the woman is the greater-concerned party in the production of children. Mahatma Gandhi was also in favour

restricting population increase and, in a recent speech, Sardar Vallabhbhai Patel also made mention of the desirability of population control.

To-day India has to beg its food at other doors and is occasionally able to secure—perhaps somewhat reluctantly—its food needs at enormous costs. Our Food Minister at the Centre placed the figure at rupees one hundred crores and indicated that this bill is likely to increase in the future. Our Governments at the Centre and the Provinces have launched a number of schemes for increasing irrigation facilities which is an important factor in increasing food production. It is widely admitted both in India and outside that to-day large numbers of our people do not get two square meals a day. With these facts before us it would be futile to hope that increased crop production would be able to meet squarely our food needs unless population increase is also controlled.

A sad feature associated with our increasing population is the fact that as the result of prevailing illiteracy, the very people for whom birth control is badly needed, are not in a position to understand or realise the need for control. In smaller countries like Sweden, Denmark and Switzerland with a higher literacy and self-conciousness we are told that propaganda by the public and Government agencies in favour of birth control was soon found translated into an appreciable decrease in births particularly in the cultured classes.

Birth Control Societies in our country are few and it is evident that these have not been able to make themselves felt in circles which guide policies or initiate legislation. Fortunately, the personnel of the present Government is in closer contact with mass psychology and is also in the advantageous position of making itself felt through the press, the platform and the radio.

In early days of Aryan colonization the need for population increase—a dire need at that time—was efficiently dinned into the Hindu mind at every religious, semi religious and social function during his whole life period. The rapid and unthinking increase to-day is proof of the efficacy of the methods. With the changed conditions there is need for ideas in connection with birth control to be widely and constantly broadcast in an efficient manner.

The least that the Government and public can do in this matter is firstly, to introduce needed biological and sex education in the higher schools and colleges; secondly, to establish and run birth control clinics in a large number of places; and thirdly, to organise the manufacture and sale of harmless and cheap appliances without the usual taboos that are associated with such trading. The urgent need for educational endeavour in this line will be evident from the fact that most people in the country do not know that to-day harmless and simple operations are available for sterilising oneself after breeding the desired number of children. In the case of men the needed operation is said to be not unlike the pulling out of an undesired tooth.

The need for pupularising birth control measures exists both for the towns and for rural parts and particularly for the latter because of the lower literacy and education in these parts.

particularly the distribution of the old debts are not known.

In the past the agriculturists have been allowed to collect a debt which is expected to show a substantial decrease due to the World War II and the subsequent high prices. It is true that a conclusive answer cannot be given in regard to the present rural indebtedness without detailed statistical enquiry. An enquiry has been concluded in Madras and the results show that so far as the tenants and landless labourers are concerned, the indebtedness has increased. It has, however, decreased in the case of landlords and big tenants who in all probability had a surplus to sell.[2] Yet compared to the position in 1939, there is a reduction of about 20% in the estimated provincial total debt as well as debt per capita.[3] If the low value of the rupee is taken into account, then the real burden of the debt in Madras may be said to be about one-fourth of what it was in 1939.

A very encouraging picture! But such low real burden may change to a staggering real burden unless three steps are promptly taken. One, agriculture should not be a deficit economy.[4] Two, the agriculturists should no longer be allowed to fall compulsorily an ignorant prey to the Mahajan. Three, the debts be made self-liquidating.

But these remedies are more relevant to the case of sections in the villages whose debts have really decreased. As is evident from the Madras enquiry as also from a few studies made in U.P., Gujarat[5] and Bengal,[6] although the greater part of debt is still in the accounts of the medium and small landholders, so far as the tenants and agricultural labourers are concerned, their debts have increased. So far as these two groups, which easily make up one fourth to one-third of the agricultural population, are concerned, the solution does not lie in credit facilities but in employment facilities.

Agricultural Indebtedness

A digression at this stage. The problem of agricultural indebtedness and the importance of agricultural credit have been receiving the attention of the State since the seventies of the last century. Since then both positive and negative *attempts* have been made and steps taken. Under the 'positive' head, mention may be made of cooperative credit societies, greater facilities to these credit societies,

2. The percentage share of the different classes in the debt is as follows:-

	Big landlords	Medium landholders	Small landholders	Tenants	Landless labour
1939	15.4	43.5	34.3	5.4	1.4
1945	10.8	41.0	38.7	7.0	2.5

The actual debt has decreased even in the case of small landholders by about ten percent.

3. Based on an examination of 8530 families, during 1939-1945 the estimated provincial debt has *changed* from Rs. 272 crores to 218 crores and the per capita debt from Rs. 51 to Rs. 40.8. If the estimated debt of Rs. 27 crores incurred during 1939-45 is ignored, the amount could be said to have been reduced from Rs. 272 crores to Rs. 191 crores.

4. During 1945-46 the Cooperative Land Mortgage Banks disbursed loans amounting to Rs. 42.78 lakhs as against 24.77 lakhs, but the advance collections decreased from Rs. 14.73 lakhs to Rs. 13 94 lakhs. It may be indicative of the ebbing economic fortunes of the average Indian ryot.

5. War and Rural Indebtedness in Gujarat by M. B. Desai, Indian Journal of Economics, Vol. XXVI, July, 1945, p. 101.

6. Agricultural Population by Shafiqur Rahman, Indian Journal of Economics. Vol. XXVII. July, 1946, p. 59.

beneficial linking of the indigenous moneylenders and bankers, inculcation of the habit of thrift and more *takavi* loan facilities. Under the 'negative,' one may enumerate delegation of the powers to the courts to open up the debt-cases;[7] to scale down the sum due and to allow the debtor to repay by instalment; control over transfer of land;[8] reduction in rates of interest and the debts;[9] and control over the moneylender's business.[10]

These remedies have neither been adequate nor have they been efficiently administered. At least one of them, viz., the credit societies came to be developed through a (deliberate?) wrong analysis of the situation. The rising agricultural indebtedness has been mainly due to the State policy and the consequent (?) growing poverty: and to some extent due to the dishonesty of the creditors on the one hand and the habits and customs of the borrowers on the other.

Its Causes

True, the imperial exploitation policy crushed our industries. What it did more was not to allow us to reshuffle our economy in the face of possibly inevitable impact of the western economy. It led to our poverty. Besides, while the former rulers were rather apathetic to the creditors, the centralised system of justice, which gives a decree miles away from the 'spot' smoothened the way for the creditor to acquire the land and property of the agriculturist debtor after proving him a defaulter.[11] There was no control on the transfer of land either, and when one did come,[12] it soon became fruitless after the rising of a new class of agriculturist money-lenders and of the system of *Benami* transaction, under which land would be purchased in the name of an agriculturist but the benefit would go to the non-agriculturist purchaser. The state had no control on the rate of interest, nor on the amount to be repaid, nor on the maintenance of the accounts. It did nothing and its justice coulddo little unless a case was brought to it. Meanwhile, rising land-values due to higher assessments, transport development and higher prices led the illiterate to borrow recklessly and the moneylender to lend freely till he could pounce on the debtor's land.

The state in a way helped the deterioration of the situation even by the rigid recoveries of the land revenue, rent and

7. Under the Amendment to Code of Civil Procedure Act and the Usurious Loans Act. But it was not obligatory to open all cases, nor was the usurious rate of interest defined. In certain provinces (including U. P.) an attempt was made to define the usurious rates and to make it obligatory for the court to reopen the account through an amending act.

8. Under the Land Alienation Act, Encumbered Estates Act, Regulation of Sales Act and Temporary Regulation of Execution Act. The first banned the transfer of land to non-agriculturists. As a result a class of agriculturist moneylenders came into existence.

9. Under Debt Redemption Acts and Debt Conciliation Acts.

10. Under Control of Moneylenders Act.

It must be mentioned that there has not been uniformity in regard to the legislations adopted in the different provinces. It should also not be concluded that each province has all these acts. Thus U. P. had no Debt Conciliation Act. As yet it also has no Control of Moneylenders' Act, although curiously a reference to such an Act is made in various books. The fact is that a Bill to the effect was under proposal when the Congress Ministry resigned in 1939.

11. *Cf.* The Punjab Peasant in Prosperity and Debt by Darling, pp. 179-180.

12. *Viz,* Land Alienation Acts. In 1938-39, in the Punjab, necessary amendments were made to prohibit Benami transactions as well as acquisition of land by the agriculturist moneylender before the expiry of three years after the repayment of debt.

the dues of the state loans[13], which too have been granted inadequately and defectively.

Increasing pressure of population on land, famines, uncertain failures of crops, malnutrition leading to ill-health are consequential, and additional bends in the rising spiral of agricultural indebtedness. Still others are the spiritual outlook (the fear of hell), the tradition to accept the parents' debt, the litigation-sense and even the social expenses.

Unduly high rates of interest, wrong accounts, non-issue of receipts, forging of accounts on blank-sheets of paper bearing the debtor's thumb-impression are also examples of bends inserted by the creditors.

The Remedies

It is satisfying to note that the state can claim to have given the indication of realising the necessity for tackling the problems of agricultural indebtedness and credit. The Royal Commission on Agriculture, the Banking Enquiry Committees and others made constructive recommendations. But sincere efforts to tackle the problem were not made till the advent of the popular Ministries. It must however be mentioned that their immediate predecessors did try to act in the same direction as Ministries-to-come would take. After the Economic Depression of 1930–32, they gave us such legislation as the Encumbered Estates Act,[14] the Regulation of Sales Act,[15] the Regulation of Accounts Act,[16] the Usurious Loans Amendment Act,[17] the Temporary Regulation of Execution Act,[18] the Agriculturists' Relief Act and the Debt Conciliation Act.[19] The most important negative steps of the popular Governments in regard to Agricultural indebtedness have been the Debt Redemption Act, the Regulation of Agricultural Credit Act and the Regulation of Moneylending Act. The first reduced the total amount repayable on account of any loan to a certain percentage of the principal, laid down the ceilings to the rate of interest for secured and unsecured debts, and restricted the extent to which the borrower's land or agricultural produce could be given in repayment. Cooperative societies and

13. Long-term credit was granted under the Land Improvements Loans Acts, 1883 and short-term credit under the Agriculturists Loans Act, 1884. The loans granted are not likely to exceed Rs. 1 crore (Vide, Proceedings of the Fourth Conference of the Indian Society of Agricultural Economics, Pg. 186-188). The amount of the loan applied for is arbitrarily reduced, and it is granted after undue delay. Illegal gratifications are not infrequent and the real rate of interest was calculated by the U. P. Banking Enquiry Committee to be as high as 25% in some cases. Some improvement was sought to be made in U. P. by an amendment of the first Act in 1934 to allow grant of long-term loan for repayment of old debt as well.

14. In U. P. it was passed in 1934.

15. In U. P. it was placed on the statute book in 1934.

16. It first came into existence in the Punjab (1930) under which regular accounts have to be kept and a statement of account is submitted to the debtor six monthly. In default the court can disallow interest, in part or whole, as also costs. There is no such Act in U. P.

17. The U. P. Government amended the Usurious Loans Act in 1934.

18. The Act came into existence in U. P. in 1934.

19. No such Act exists for U. P. The Act was first passed in C. P. (1933) and provided for *voluntary* conciliation of debts through Debt Conciliation Boards with representatives of both debtors and creditors. The *voluntary* and *persuasive* method has been the greatest hinderance to progress. Another hindrance has been that the conciliated debt is not invariably taken over by the land mortgage banks or the state so that it may be realised from the debtor over a long period. Its repayment is sought out of capital and not the future repaying capacity (income) of the debtor.

scheduled banks are exempted from the provisions of the Act. While the Debt Redemption Act (1940) refers to past debt, the Regulations of Agricultural Credit Act (1940) refers to future debts. In U. P. the latter restricts the attachment of the agricultural produce to one-third. So far as land is concerned, a portion on which the land revenue does not exceed Rs. 250 can only be mortgaged with possession upto a maximum period of twenty years. Cooperative societies are exempted from the provisions of the Act. It would be better if as in the Debt Redemption Act this Act too had made provision for laying down the ceilings to the rate of interest and had adopted the principal of *Damdupat*. The two acts have once again affirmed the fundamentally important principles viz., (1) that a debtor should not be allowed to suffer increased burden due to factors outside his control, (2) dishonesty must be punished, and (3) all obligations and contracts should be subject to one general and vital rule, namely, maintenance of an ordered form of society and security of livelihood.

The third makes it desirable or obligatory for the moneylenders, except scheduled banks and cooperative societies, to get a license which may be renewable annually. The licensees alone have a right of access to the court for the recovery of loans. They have to maintain proper accounts, have to render an account to the debtor every year, have to issue receipts on proper forms and run the risk of having their license cancelled, in some cases even being liable to fines and imprisonment in case of omission, fraud and molestation.

These three important pieces of legislation have not yet been uniformly adopted all over India. Even as they exist in some of the provinces, they leave much to be desired, improved and added. Thus in U. P., the Debt Redemption Act involves a lot of litigation by the agriculturist debtor. The redemption of the mortgage on the usufructuary basis can be made automatic. The Regulation of Agricultural Credit Act only indirectly lays a limit on the extent of loan that the agriculturist can get. The rate and the amount of interest may also be laid down in order to save the exploitation of those who do not mortgage, or mortgage without possession, i. e., where the rents and profits of land mortgaged are not to be received by the creditor. The provision for this can be made in an Act which may be passed in future for the Regulation of the moneylenders.[20]

Future Steps

The different acts regarding agricultural credit and indebtedness have been in operation for some years. The World War II did create interference in the operation of conciliation, relief and regulation acts. Yet before new steps are taken it is essential that the position be reviewed. Full benefit should be taken of the experience gained and of the new debt-structure after the War.

As already indicated, theoretical reasoning and preliminary studies indicate that the debts have decreased substan-

20. Besides these, a strong case can be made for extending insolvency facilities to the agriculturists. The Insolvency Act (1920) provides for this upto Rs. 500 or more provided the rights are not protected from sale in execution. In some provinces (Bengal, C. P. and the Punjab) insolvency provisions have been secured in the thirties. Nothing has been done in other provinces, although even the Royal Commission on Agriculture has recommended such a facility even for sums less than Rs. 500.

tially in the case of big and medium landlords, and well-to-do tenants. The balance of the debt in these cases should not be left to the sweet manipulations of the creditors. They may be taken over by the State or by the multi-purpose cooperative organisations that may be developed in the villages. Besides, there is the urgent need for greater publicity and an adult education drive. If the villagers know the legal facilities extended to them, they would offer as a body an effective opposition and corrective to the creditors.

The most important remedy in the case of the rural workers is the development of non-agricultural employment. For this, as no doubt for agricultural requirements, better and adequate credit facilities are necessary. This brings us back to the question of the future credit agency. Commercial banks have already been shown to be unsuited for the purpose. It is true that takavi loan facilities have been broadened but they are more meant for the period of emergency. For normal finance, the slow and cumbrous nature of the State rules it out as the future credit agency.

State Banks

The case for state banks deserves greater consideration. They have succeeded in other countries and have been proved to have succeeded atleast in one European country where the economic conditions are as in India. But the other countries do not weight the scale of importance so much as the one European country–Bulgaria. We certainly require more proof of this kind. Even so, the argument may be advanced that these countries are very small compared to India. Also, too many state-owned and state-managed institutions are not desirable from long period considerations State ownership and management call for a very high sense of duty on the part of the officers and the minimisation of the 'red tape'. These conditions are difficult to satisfy.

Cooperative Credit

This does not mean that the central bank of the country cannot be state-owned, nor that the state should not play a desirable greater role for improving the working condition of the existing alternative sources of agricultural credit. In this land of seven lakh villages there exist more than a lakh of agricultural credit societies. It means one society for seven villages with about 3400 persons and seven hundred families which is but reasonable. In the past the credit societies have been a failure not merely because of the causes which are generally cited [21] but particularly because of a few fundamental causes. Firstly, as already indicated, it was a wrong analysis that the problem of agricultural indebtedness and credit was the most important problem of Indian agriculture. Ours was, and still is a problem of employment and production. Secondly, the cooperative societies were to contact the rural man at one point—mainly credit—and not at a number of points as the village money-lender does. Fortunately for us the view is fast changing in favour of multi-purpose societies. Thirdly, the development of cooperation was sought without full explanation of and education in

21. Some of these defects are :— (i) Unlimited liability, (ii) bad selection of members, (iii) large area of operation, (iv) inadequate funds, (v) internal dissensions, (vi) lack of members' interest, (vii) indiscreet loans, (viii) grant of loans to a favoured few, (ix) unpunctual repayments, (x) insufficient supervision.

cooperation. It is now being realised that cooperation cannot be successful unless those who make use of it fully understand its meaning, implications and importance.

In future agricultural credit should be provided through multipurpose societies. These should raise the funds locally as far as possible. Their remaining requirements should be satisfied by the central cooperative banks, provincial cooperative banks and the Reserve Bank of India. The service of the societies must improve. The delay between the receipt of a loan application and the grant of the loan must be reduced as far as possible. If in the short period, the 'red tape' cannot be cut down, the requirements of the agriculturist-members may be forecast and the previous sanction of the authorities obtained upto a certain limit. The money may then be withdrawn from the central bank in no time, when the applications for loans are received. There should also be brought about a rapid growth of godowns and warehouses. It is to be appreciated that the Reserve Bank of India has circulated to the provinces a draft bill for licensed warehouses [22]. Under the various post-war schemes the provincial governments also propose to assist the construction of godowns both technically and financially. In this connection the Madras scheme to provide half the cost of construction as a grant and the rest as a long period loan at a very low rate of interest is the best. The provincial government may even get the godowns constructed at their own cost, as was proposed by the Section 93 Government in U. P., and then let it out to the cooperative societies.

The Reserve Bank of India extends certain facilities for agricultural credit to and through the provincial cooperative banks. In 1943 the Reserve Bank put into operation a scheme to extend financial accommodation to the cooperative central banks for the purpose of financing seasonal agricultural operations or the marketing of crops at concession rates through the provincial cooperative banks. A rebate of one per cent in the Bank Rate has been allowed in cases of rediscounts and advances of bills and promissory notes drawn for financing marketing of crops. This has been extended since 1944-45 to bills and promissory notes drawn for financing seasonal agricultural operations. As an experimental measure the rebate has even been increased to 1½ percent. These are welcome steps taken by the Reserve Bank. It is now more up to the cooperators to make the central cooperatives benefit by these facilities and increase the credit supplied by the primaries to the agriculturists. As has been already indicated, the primaries shall have to be of the multi-purpose variety.

It may also be mentioned that the Cooperative Planning Committee rightly recommended the broadening of the interpretation of the term 'crops' and the modification of section 17 of the Reserve Bank of India Act to enable the Bank to make advances for financing industrial cooperatives.

Indigenous Moneylenders

So far as the indigenous moneylenders are concerned, the attitude of the

22. Some years back the demand was for appropriately changing the wording of Section 17 (4) (d) of the Reserve Bank of India Act. (see chapter on Agricultural Marketing in India). That demand should now lose force. The demand should now be that the state which is becoming popular and godown-and-warehouse-conscious should speed up the construction of these.

a mortgage of land. But the sureties are intended to make two members of the cooperative keep an eye on the borrower. If it is difficult to find them it is rather indicative of weaker cooperative ties, and steps should be taken to strengthen the relationship through better living, cooperative education and other activities. Of course, it is not desirable to restrict the membership of the society to the borrowers. It is not a right practice to cease the membership after the loan of a member gets repaid. The presence of non-borrowers makes the administration strict and efficient. Similarly, it is unwise to ask for repayment-instalment after the first year, irrespective of whether the use made of the loan yields a return immediately or after some time (years).

Lastly, the mortgage banks have not been successful so far as financing of long-term improvements is concerned. This is due to the reason that for such improvements money alone is not sufficient. The cultivator must also be provided with technical knowledge and facilities about agricultural improvements and housing. Unless therefore the various development departments e.g., Agriculture, Veterinary, Public Works and Cooperative, could combine to chalk out schemes and take up different appropriate sections, the rural masses are not likely to benefit by long-term finance. Incidentally, there should also be no objection to the grant of long-term loans to cooperative dairying, processing and production societies against the mortgage of land, building and machinery.

SCOPE AND METHOD OF TEACHING AND RESEARCH IN AGRICULTURAL ECONOMICS IN INDIA*

By: R. S. Shiwalkar

PRESENT is the age of innumerable controversies between thinkers and workers all the world over though the common objective is that of restoration of peace and prosperity to the human race as a whole. Countries and Nations are grabbling with the situation in their own ways trying to achieve the desired object. In other words, this is a period of transition in which conditions of life are not settled and are undergoing frequent changes at very short intervals. In this stormy atmosphere of unsteadiness there are certain facts which are accepted by thinkers of all shades of opinion and workers on different fronts, to be true about India. They are:—

(*a*) That India is an agricultural country where a very large majority of the population as much as three-fourths or more living in villages is supported by Agriculture alone.

(*b*) That the Indian Agriculture in most of the Provinces and States of the country is a deficit economy.

It naturally follows that the largest number of people of our country engaged in Agriculture or the largest single industry of the Nation is living under the conditions of deficit economy. The description about abject poverty, partial starvation and nakedness and very low standard of living of the masses in India is, as such, free from even traces

*Paper read at the recent Conference of the Indian Society of Agricultural Economics held at Hyderabad (Dn.).

of exaggeration. The question, therefore, arises: How can the economic well-being of the general populace particularly those engaged in agricultural pursuit be best promoted without unjustifiable interference with the welfare of other parts of population in India ?

Historical Retrospect

In the quest of an answer to the question or a solution to the problem which is of the magnitude of a national one, we may take stock of the policy adopted and efforts made by the Government and non-Government agencies in India in developing agriculture and promoting welfare and prosperity of the agricultural population living in village India. Efforts on the part of the latter being conspicuous by their absence in this field till very recently, a peep into the agricultural policy adopted by the Government of India so far will well illustrate as to what has been done in that direction. There is little evidence to show any organized efforts to conduct any research in agriculture in India in the pre-British period. In the early period of the British rule also nothing was done to promote the cause of agriculture. Frequent crop failures and consequent famines at the end of the last century, however made the rulers feel that something should be done to improve Indian Agriculture. Several committees and commissions were appointed to investigate into the matter and to make recommendations on the subject. Important among them were the Famine Commissions of 1880, 1898 and 1901, Irrigation Commission of 1903, Commission on Co-operation of 1915 and the Commission on Agriculture of 1926. All these commissions enquired into their terms of references and submitted their reports containing very valuable suggestions and recommendations on vital points. But nothing was done beyond the establishment of an Agricultural Research Institute and an Experimental Farm at Pusa in about the year 1903. This was the beginning of organised research in agriculture in India. Within two years i.e. by about 1905, different provincial Governments also took up the subject and commenced action by establishing provincial agricultural Departments and Agricultural Research Institutes. Experts and specialists in highly technical subjects like Mycology, Entomology, Agricultural Chemistry etc. were imported from outside to guide researches in their respective branches of the Agricultural Science. Investigations undertaken, inventions made and activities conducted by them and subsequently by others manned from India during all this period of about half a century have definitely made valuable contribution to knowledge of the subject. But judged by its results the agricultural policy briefly outlined, has failed very miserably in the practical application of the knowledge so acquired. The Bengal tragedy of 1943, the present insecure food position of the country accompanied by precarious conditions of the agricultural industry in India clearly indicate that the efforts made in the past have been inadequate and lacking in something essential.

The Real Problem

The main reason for the failure of Indian agricultural policy is that the real problem has not been considered in all its bearings. It is revealed that agricultural efficiency was attributed to technological improvements only. And a good deal has been done to make a headway in this direction. But what are these programmes, their achievements and con-

Reserve Bank has been that they should put their houses in order first As has already been seen, certain provincial governments are making legal provisions for setting these houses into order. While greater publicity may be given to the various regulations for controlling the activities of the moneylenders, it seems that the Reserve Bank should now take another step forward and extend certain credit facilities to associations of moneylenders through scheduled banks. Possibly a rebate can be granted to the scheduled banks on rediscount of bills and promissory notes drawn by the associations for seasonal agricultural purposes or marketing of crops, provided the scheduled banks allow a similar concession to the associations. Alternatively, the condition may be that the bill or promissory note may be drawn and accepted by licensed moneylenders.

It is well-known that a large part of the agricultural credit is obtained through individuals who are also dealers. The most effective way to bring about an improvement in their ways of business is to strengthen and expedite the growth of multipurpose cooperative societies.

Long Term Credit

There still remains to consider the problem of long term credit. It is true that we have little data to throw light on questions such as are given below :—

What part of the agricultural debt is against mortgage ?

What is the ratio of the repaying capacity to the long term debt ?

What is the ratio of the annual mortgage repayments to mortgage debts?

How is the mortgage debt distributed between the different (i) sources of such credit-individuals, commercial banks, cooperatives and the state; (ii) classes of borrowers ?

It might be said that these questions are more relevant where agriculture is a paying proposition and where a significant portion of the credit is supplied by each of the different sources. In India most of the agricultural credit, including mortgage credit, is provided by the individuals. Cooperative mortgage credit to individuals was only about Rs. 3.6 crores in 1942-43. The cooperative land mortgage banks have been criticised for their past policy of refinancing old debts. Refinancing of old debts at lower rates of interest is desirable. This is more so when compulsory conciliation and redemption of old debts have been provided by law. It is but desirable that the reduced debts be taken over by the land mortgage banks with a first charge on land. But full attention must be paid to the land-value and the repaying capacity of the debtor. A loan which is out of proportion to the repaying capacity may lead to overdues. It may have more serious results. The debtor may pay less or little attention to repairs and depreciation. He may even follow a crop-plan which shall mean exploitation of the soil. Hence it is a practice of some land-mortgage banks in America to mention the crop-plan to be followed in the mortgage deed.

Land Mortgage Banks

The story of the land-mortgage banking in India is the story of the movement mainly in Madras, followed by Bombay, C.P. and the Punjab. For raising mortgage funds, bonds and debentures are always preferable to deposits which are for short periods. Yet debentures have been issued only in Madras and Bombay : others have mainly depended on deposits. The difficulty has been the lack of goodwill. In

the absence of federations of land martgage banks, and with the attitude of the provincial governments not to guarantee the repayment of principal and interest, the mortgage societies have suffered from shortage of funds, though the recent statistics reveal a surplus of borrowings over loans. The Reserve Bank too has maintained the most strict and austere outlook. It is true that the central banking institution is generally to play an active role during an emergency. In India a state of emergency has existed for long and the Reserve Bank would seem to be waiting for an emergency within an emergency. It could go beyond the nice advices given in its various bulletins and the Statutory Report. It could ask the provincial governments to guarantee the principal and interest on the debentures. The Reserve Bank itself could accept such guaranteed debentures as security for accommodation under section 17 (4) of the Reserve Bank Act. At times pains have been taken to explain that the marketability of debentures depends on other factors which would prove the "guarantee of soundness and solid reputation", but it has been forgotten that the help sought from the provincial government and Reserve Bank would prove better and cheaper than the "other factors" in the present circumstances.

State Banks

The failure of the Reserve Bank and the provincial governments now seems to lead to a much greater demand. It is suggested by some that the state should provide long term finance through the cooperative departments. The Agricultural Finance Sub-committee wants that the Government should subsidise the mortgage banks. The state may well arrange for the mortgage finance. Where, however, the cooperative mortgage agency exists and is working satisfactorily, it is preferable to promote it rather than scrap the institution before it shows signs of failure. One might go a step further: since "democratic control" is preferable to state control as far as possible long term, finance may be provided through 'A' and 'B' class credit societies with say, ten years' standing. I would suggest that the state should concede the demand for guarantee and let the provincial cooperative banks float the debentures. Incidentally, here a question may be raised: Should there not be separate machinery for long term credit? I think, no. Where a provincial bank exists, it should suffice to place long term credit under a separate department and a similar arrangement should be made in the primaries. The arrangement would reduce the difficulty of finding administrative staff.

It is the aim of the mortgage bank to provide finance at a low rate of interest. This depends partly on the borrowing rates and partly on the difference which the bank may be obliged to maintain between the borrowing and lending rates. Thus although in Madras funds have been raised at 2.75%, the lending rate is about 6% because the margin as required by the Government is 3%. If the mortgage banks have been working successfully, if their profits would allow it, and particularly if the banks demand a reduction in the 'margin,' the reduction should be granted by one per cent. In these days of cheap money policy the goal in regard to the return on mortgage credit should be 4%.

The delay in the grant of loans should also be minimised. It is sometimes argued that it is unnecessary to ask for two sureties when the loan is backed by

sequent agricultural activities of the State and the public meant for? Unless the achievements in Agricultural science are carried to the nook and corner of the country benefiting the maximum number of people, they have no value and utility except as additions to knowledge. It is here that the agricultural policy adopted to improve Indian agriculture lacks in coordinated efforts and actions. It is one thing to discover new truths about the laws of the nature and their application to agriculture. While it is quite another thing to utilize these technical achievements to the best advantage of the community as a whole. Failure to recognise this fact has led to the narrow outlook and ineffective agricultural policy in concentrating energies upon technological improvements alone. Application of scientific knowledge so as to benefit masses in rural areas has been consequently completely ignored, whether it was wilful or otherwise is not for us to discuss.

Several illustrations can be cited and instances quoted in support of what has been said above, viz., that agricultural efficiency does not depend upon technical perfection only but upon some other factors as well. One such illustration may be chosen regarding the methods of growing rice, the chief food of most of us. The universal method adopted to grow rice is by what is known as the transplantation method. Seedlings of rice plants raised in a specially prepared separate nursery are planted, when about four to six weeks old, into the main fields after proper puddling of the soil. In the Central Provinces and Berar more than ninety percent of rice cultivation is restricted to two tracts, (i) the Chhattisgarh tract and (ii) the Wainganga tract, comprising of five contiguous districts of the Province. In the latter, paddy is grown under transplantation while the former has its own method known as "Biasi" method. Under this, seed is sown broadcast in the beginning of the rains, plants are allowed to grow for about four to six weeks after which rice fields are worked with country ploughs, the operation being locally known as "Biasi" in Chhattisgarh. On comparing the merits and demerits of both the methods the transplantation method has been found to be much superior to the Biasi method in all respects. The fact was not only given a very wide publicity but was largely demonstrated also throughout the Chhattisgarh tract for a sufficiently long period. But the transplantation method practised in the adjoining districts of the Wainganga tract did not find popularity in Chhattisgarh districts, owing to certain reasons which are not agricultural but economic in character. Obviously technical superiority alone cannot alter the agricultural practices of a place unless the technical superiority possesses one more attribute of being adaptable to the community life of the place, in the absence of which the inferior but adaptable methods and practices would continue unaltered. And as such the inferior Biasi method still finds its sway all over the Chhattisgarh tract without being replaced partially or wholly by the superior transplantation method. So the measures to promote welfare and prosperity of the agricultural population in Chhattisgarh can better be evolved out by a very close and careful study of the community life in the tract as related to agriculture rather than by forcing the unsuitable technically superior method or methods only.

Another instance may be quoted about the problems of employment in

agriculture and the role of subsidiary occupations as a measure to solve the problem of agricultural unemployment or under-employment. In the course of his enquiries to study some economic problems of two separate villages in the Central Provinces and Berar the author came across divergent conditions. In one village, cultivation and allied occupations together with two important forest industries do not offer enough opportunity to keep the village working population wholly engaged. There are varying degrees of employment in different periods of the year, under-employment to the extent of about 45 percent being forced upon the workers for a period of about five months between January to June. Additional secondary occupations or means to intensify agriculture to eradicate this under-employment over a considerably long period are longed for, so as to ameliorate life in the village. In the other village, on the contrary, occupations other than agriculture like brick laying, cart hire etc., being possible, cultivation is being regarded and treated as a subordinate occupation keeping the villagers enganged from the middle of June to the end of October, the period being slack season for the non-agricultural occupations. This is, thus, an instance to show that agricultural improvement, a matter of national importance, is hampered by subsidiary occupations, otherwise considered to be essential for the development in agriculture. In this way there is ardent craving for some subsidiary occupations in villages of the type of the former, whereas in the case of the latter type of villages they have done more harm than good to the cause of agriculture and agricultural development. The growing menace of Bidi making industry to agriculture in some parts of the Central Provinces and Berar which compelled the Provincial Government to take up legislation to check further deterioration in the situation also illustrates the fact. But legislation cannot be a permanent or a lasting solution of the problem. Effective measures, framed after careful study and researches into the problems of the locality or localities, so as to establish a balance between agriculture and non-agricultural industries may alone lead to check the unhealthy competition between the two.

The foregoing facts and illustrations bring forth that Indian agriculture, at present, does not suffer as much from technical handicaps, as it does on account of economic or socio-economic factors, the industry being a partnership between man and nature. The physical factors like rainfall, temperature, soil, organisms etc. are well known to impose limitations upon agriculture and agricultural production. Similarly phychology of a person towards his occupation, relation of one individual with the other and the society as a whole and such other factors influencing his behaviour in so far as the material aspect of his life is concerned, are responsible to a very great extent in determining the nature of agriculture of a particular place or a country. Success in agriculture will, therefore, depend upon how best a man can ameliorate the natural deficiencies and control the natural adversities together with how best he can organise himself in the conduct of ordinary business of his life as related to land. The whole problem of improvement in agriculture and the promotion of welfare and prosperity of the rural population can, thus be divided into the following aspects:-

(a) The technical aspect which includes the discovery of new truths about the laws of nature and application of the same to agriculture i. e. production of plants and animals.

(b) Aspect of Agricultural Economics which includes man's actions in the ordinary business of life as related to agriculture. This aspect takes into account the adjustment of various factors of agricultural production in such a way as to produce the largest profit per unit of production e. g. land, labour, capital etc.

(c) Aspect of Rural Sociology which takes into account how best farmers can organize their own as well as the common resources of the people as a whole for the purpose of promoting national welfare.

Scope for the Study of Agricultural Economics

Out of the three aspects the first that is the technical aspect forms a subject by itself. We may confine ourselves for purposes of this paper to lay stress upon the importance and urgent necessity to study the remaining two aspects of rural development problem, viz., the aspects of Agricultural Economics and Rural Sociology. Throughout the entire period of British rule in India both these aspects either for political reasons or otherwise, wilfully or accidentally appear to be systematically ignored. Very recently owing to national awakening throughout the length and breadth of the country some scattered attempts have been made by certain individuals and private institutions to conduct experiments and research to study these problems e. g. the Adarsh Seva Sangh, the Indian Society of Agricultural Economics, the Gokhale Institute of Politics and Economics, the All India Village Industries Association etc. The newly formed national Governments though manned by our men had little respite to do justice to fill the void created by their predecessors. However, the fact remains that improvement in agriculture and promotion of welfare and prosperity in rural areas are not possible unless studies in Agricultural Economics including Rural Sociology are not given their due place in the agricultural policy of the country and the results and findings of such researches are judiciously and cautiously arranged to be applied for the amelioration or revitalisation of the life of India's agricultural population.

Mahatma Gandhi is reported to have said once that, "We have a Central and Provincial Governments manned by our people. Let it not be said that they also cared only for the city people at the expense of the villagers". "Let the popular Governments", Gandhiji said, "wake up to the urgency of renovating India's rural life". This clarion call from the Mahatma, a life-time devotee to the service of the masses, was not only natural but apposite. A rural reformer, at present in India, is greatly handicapped by the lack of readily available information as to the details of village life. It may be pointed out that for the systematic promotion of the welfare and prosperity of the agricultural population exact and detailed information is required of the forces at work tending to produce a decline or an improvement in their condition and it is difficult to frame remedial measures in the absence of accurate data on which the probable effects of such measures could be calculated. So importunately urgent is the need and wide is the scope for teaching and research in 'Agricultural Economics" in the programme for national development

of the country. A speedy change in outlook and reorganisation of the agricultural policy so that technological improvements are well co-ordinated with the economic, social and legal status of the man-behind-the-plough should not be allowed to be delayed any longer for the successful achievement of the desired national object of renovating life in villages. Every new activity needs a band of workers and thinkers for its successful execution, workers to look after the routine and thinkers to evolve new truths and to hold the torch of guiding policy. This opens the wide field for teaching Agricultural Economics to create a class of workers and the field for research to dig out truths of socio-economic laws applicable to our conditions of life and society.

Method of Teaching Agricultural Economics

Knowledge of Agricultural Science combined with acquaintance of the principles of economics does not mean the study of Agricultural Economics in its entirety. A person possessing the same however, may be considered to be better equipped to understand the principles of Agricultural Economics and to apply the same advantageously. Agricultural Economics is thus a subject by itself necessitating special arragements to impart instructions in the same. Students of Economics and students of Agriculture and allied sciences will make up the necessary human material qualified to learn Agricultural Economics. In addition to knowledge of the general principles of Agricultural Economics every student of the subject must undergo training in practically studying some of the various problems of life of the agricultural population by actual village surveys either individually or in a group. It is a happy augury that some of the Professors and Lecturers in certain Colleges together with their students interested in the study of Socio-Economic problems of rural areas have begun to devote thought, energy and time in conducting periodical investigations into some village problems. The drift activity, as it may be called, however needs to be systematised, as surveys should now be conducted with some definite object to throw light on any particular aspect of rural life in the village or region as the case may be.

Method of Research in Agricultural Economics

Specialization and higher studies in Agricultural Economics either through private enterprise or by attending training classes of the type of the one conducted under the auspices of the Adarsh Seva Sangh with sufficient practical experience in conducting survey work would make persons fit to undertake research in the subject. It is on the quality and quantity of research work in Socio-Economic conditions of rural life that the progress and promotion of the welfare and prosperity of the agricultural population in India, will depend. Every geographically homogeneous region, and every village in such a region and every land holder of a village is faced with some problems of its or his own. All of them obstructing agricultural prosperity of the nation must be studied in their true perspective so that remedial measures can be framed to root out the evil forces in action. Besides their location, the internal forces resisting progress have to be compared with similar ones in other countries of the world existing either in the past or at present and the way in which their resistance was met or is being met with to clear the path of

agricultural prosperity, bearing fully well in mind that every problem in a country is necessarily associated with some peculiarities typical of the country. No apparently similar cause or causes responsible for a particular state of affairs in two or more nations should be misconstrued to be removed by the same remedies in all the countries. Indulgence in blindly copying doctrines and practices adopted as remedial measures in foreign countries howsoever progressive they may be, has to be vehemently deprecated and discouraged. Nevertheless, knowledge of international problems of agricultural development and prosperity of agricultural populations in outside countries acquired with broad outlook, clear vision and thorough understanding is essential to solve some of the intricate problems of our nation having the attributes and characteristics of their own. The present confusion and controversy centred on the question whether to have capitalistic or cooperative or collective or peasant farming structure for India, is an example. To quote other instances we have to solve the problems regarding organisation of markets and marketing systems, and practices, stabilisation of prices of agricultural commodities, establishing the balance between agricultural industry and manufacturing industries and so on. All these and many others make one Himalayan problem of "Agricultural Economics" awaiting solution not in a very remote future. Systematically organised and carefully conducted detailed studies throwing light on the various aspects of life of the agricultural population by undertaking intensive village surveys, regional suaveys and national and international surveys will offer the necessary foundation on which the edifice of national development, in so far as the welfare and prosperity of the agricultural population is concerned, is expected to be erected. This should therefore, be the method and the guiding force for research in Agricultural Economics in India, the details to be decided in full conformity with the objective at a later stage.

Conclusion

Importance and value of the study of Agricultural Economics including Rural Sociology not being recognised and appreciated or being connived at in the past, great emphasis has been laid and much space has been devoted to bring home the fact necessitating immediate radical changes in the agricultural policy of the country. The world is moving fast and we cannot afford to remain contented to be silent observers only. Owing to its magnitude the spade work described above can neither be entrusted to nor can it be undertaken by private agencies. The State should, therefore, come forward with a call for cooperation from all quarters and lead the way out, removing darkness wich has covered the path of progress of this agricultural country, the darkness being the result of the apathetic attitude adopted towards the study of Agricultural Economics in India. Teaching of the subject has hardly begun and organised research remains untouched. Hence, the entire field is open for activity awaiting action on the part of the State and the people immediately. Once it is decided to make a beginning, details regarding the method of teaching and research would be worked out in a more comprehensive manner than the way in which the point is dealt with at this stage. The prime urge of the moment is to inaugurate to educate the workers in Agricultural Economics to undertake the multifarious and stupendous task of agricultural reconstruction to renovate and revitalise life in village India.

DEMOCRACY ON THE LAND IN BRITAIN

By: L. F. Easterbrook

THE farming industry in Britain is providing through its County Agricultural Executive Committees an interesting example of democratic self-government.

The system of executive committees is designed to decentralise the national administration of the land, so that it is carried out through the men who live, and work, on the land. It relies on the local patriotism of the farmer and the skilled agronomical knowledge of the county advisory officers of the Ministry of Agriculture.

Representative Body

Every county in England and Wales has a committee composed of representatives of landowners, farmers, and farm workers. They are unpaid, but advised and assisted by county advisory officers, paid technical experts. These committees, first introduced on the outbreak of World War II, worked so well that it was decided to continue them in peace-time with certain modifications and additions.

Each committee now has 12 members. But there are also district committees, about one to every 1,000 holdings. The district committees are manned by public-spirited farmers in the districts, and county committee members graduate through the district committees. These district committees were the backbone of the country's war effort on the land.

They were successful because they were practical men who knew local conditions and knew the men they were talking to. They did the job with tact and good humour, as often as not over a friendly cup of tea in a farmhouse, or over something a little more stimulating at the local market.

Guaranteed Prices

The county and district committees exist as a guarantee to the rest of the community that agriculture will efficiently carry out its responsibilities. The State today guarantees the farmer his price and his market. The farmer, through these committees, guarantees in return that he will not just sit down and make the best for himself out of this security.

If the State says Britain must have another 500,000 acres of wheat next year, the committees set to work to get it. Each county has its quota. The county committee instructs its district committees, and the district committees (which means the ordinary every-day farmers of the neighbourhood) then go round the farms, discuss the matter with the occupants, explain the need, and sign the farms up for the area the occupants undertake to grow.

Normally a committee would be concerned with getting every farm as productive as possible under its particular conditions rather than with getting a particular crop grown. It would try to get farmers to improve their grass land, where grass was being badly neglected, or to raise their average milk yield where yields were abnormally low, or to persuade a farmer to grow more of his own feeding stuffs so that he could keep a bigger head of stock, and so on.

Emphasis On Livestock

Behind all this a committee would have in mind the nation's requirements

in food production and would keep in step with the Government's general agricultural plan. For example, as the world's grain position gradually improves, Britain will think less about potato and wheat growing and more about increasing her livestock production. As she moves towards this, so the county committees will see that increasing emphasis is laid on livestock.

Good farmers are left fairly well alone to go their own way. The less good receive rather more visits, and it is gently indicated to them where and how they might do better. But farmers receive quite a lot of attention. If they persist in their ways and ignore the advice of their fellow farmers on the district committees, then they are put under supervision, which means they are regularly inspected, reported on and must work their farm in accordance with the committee's directions.

If, in spite of all this, they show no sign of improvement, then, as a last resort, the county committee can advise the Minister of Agriculture that they ought to be turned out of their farms. With her large population and limited space, Britain just cannot afford to have her land grossly misused. During World War II, over 3,000 farmers were turned out in this way.

Landowner's Responsibilities

The same system continues in peacetime under new committees which began functioning early last year. No farmer, however bad, would be turned out without atleast a year's grace for improvement unless he failed to comply with the committee's directions. But there is no doubt that if there are incorrigibles, they will have to go. No farmer, however, will be turned out without having the right to appeal to an independent tribunal. These tribunals have as chairman a barrister or someone with legal training. The other two members are a land agent and a farmer.

But it is not enough to ensure that farmers are efficient. The landowner has responsibilities too. He must provide the permanent equipment, such as farm buildings, that make efficient farming possible. So now the county committees deal with the estate side also. If it can be shown that a landowner is failing in his duties, he is told where he is falling short and what he must do to correct things.

Instructions to him must be reasonable. He cannot, for instance, be ordered to provide what, under present conditions, everyone knows to be unobtainable. But if it is something that he can well be expected to do, and it is necessary for the efficient conduct of the farms on his land; and if, after being given a fair chance, he has still failed to do it, then he also can be put under supervision, with the ultimate penalty of dispossession. According to the new Agriculture Act, his land will be taken from him at a fair valuation and either sold to someone else or handed over to the Agricultural Land Commission that is to manage farming land for the State.

FISHERY RESEARCH

By Dr. S. T. Moses

Fisheries and Agriculture

The Baroda Retrenchment Committee whose report was published in December, in discussing the order of priority in public expenditure says, "next to internal security, high priority would naturally have to be accorded to food-supply". Fishery as a source of food supply is, as is well known, second only to agriculture, with which is linked animal husbandry. Agriculture in our country, in spite of the great progress shown recently—witness the large amounts budgetted and spent everywhere e. g. Baroda, where the department of Agriculture was reorganised in 1936 with a budget of Rs. 1.8 lakhs spent 11.28 lakhs in 1946-47—can by no means be said to have reached such a stage when productivity can no furthur be stimulated. But at the same time it cannot be assumed that the capacity of available agricultural land to provide for the rapidly increasing millions is unlimited. Dewan Bahadur Dr. B. Sundararaj uttered this warning as far back as 1938 that agriculture even with improved methods and materials cannot quickly or completely make up the serious discrepancy between population and food supply and pointed out how in Indian fisheries we have a source of food supply capable of immediate and immense expansion and what is of the greatest importance able to supply cheaply and abundantly just those factors that are so seriously lacking in the unbalanced diet of the masses of the people. Fisheries, a hitherto neglected industry, are the only prime source of food supply to supplement agriculture, more so in these days of shortage. Sir John Woodhead, Chairman of the Indian Famine Enquiry Commission, stated in 1945, "Indian Fisheries are unfortunately for the greater part in a lamentable state". There is however no need for pessimism now that a great revival of interest in fisheries has been shown by all Governments—Central, Provincial and State. All Governments including the Central are taking steps to develop the fishery resources of the country and the programmes of development include all aspects of the fishery industry and research.

Marine Fishery Research

The successful exploitation of our marine fishery resources needs a great deal of pure and applied research dealing with Biology, Biochemistry, Physics, Statistics etc. Knowledge from the science of the oceans, including that of the weather, tides, currents etc. is essential if the harvest of the sea is to be reaped. An investigation of the plankton (floating microscopic life in the surface of the waters) and fish eggs and fry is a main item of research in Biological stations like Madras, West Hill, Trivandrum and in the Royal Institute of Science, Bombay. In England and other countries where marine Biological research work is intensively done, it has always been possible with the knowledge of the occurrence and distribution of plankton which has a direct bearing on the Fisheries, to predict with accuracy the success or failure of a particular fishery during a particular season. In the case of shoaling fish a knowledge of the Biological and Physicochemical factors which regulate

their wanderings, is very important as one could calculate where the fish can be found in a given year and to avoid vain waiting for shoals that do not appear. In locating fish shoals airplanes are of use elsewhere e.g. in Australia and here also aviation should help fishery development both in transporting fish and in spotting shoals. Thus to increase our seafish supplies and utilise them the research necessary is threefold: first the systematic classification of our fishes with the study of their life history, spawning period, their eggs and fry especially of the commercial ones; second, investigation into fishing methods with a view to improve them so as to make for more intensive fishing; third, technological investigations which include research into methods of preserving and processing fish. Our country has a long coast line made up of parts each with its distinctive characters and therefore needs a chain of marine fishery research stations; this need has been realised and is being acted upon.

Freshwater Fishery Research

In the case of freshwater fishes, besides exploitation as in the case of marine, there are two technical operations, viz., conservation and culture, and for all of these research is essential, if they are to be effective. Conservation, without a precise knowledge of existing stocks of fish, their breeding grounds, breeding seasons and habits is impossible. Similarly culture involves knowledge of the breeding habits, eggs, growth and in fact stages particularly the early ones in the life history. For exploitation and marketing as in the case of marine fisheries, from capture of fish to the finally processed product on the market, Biological, Chemical and Industrial research is essential at every step.

Fishery Research and Governments

The investigations and research for developing freshwater fisheries do not cost much comparatively but marine investigations need larger expenditure as they involve the use of research vessels for a considerable period. Often fishery departments are expected to pay their way by shortsighted governments impatient for immediate results but usually results of research and not mere rash claims need long periods of work and can never be stated in terms of money. The magnitude of the problems is such as well as the conditions of fisheries that research can never be left to private individuals or even institutions but should be taken up wholeheartedly by the Government. A well coordinated and comprehensive programme of development can be pushed through only if Government takes the initiative in the matter. A change has come about in Government circles as A. V. Hill, the Advisor, stated in May 1944: "Expenditure from public funds on scientific research in India was now very meagre but comprehensive plans for establishment of well-equipped research laboratories are being prepared." In our country where provinces and states differ not only in their geographical position, physical features and aquatic animal populations but also in their general administrative machinery, it is within the resources and power of the Central Government alone to promote schemes of fishery research for the whole of India and to secure the knowledge essential for the development of the fishery indnstry. Any improvement in methods of preservation, transport—'Railways' are the concern of the Central Government—

and development of markets would apply throughout India and that is another reason why fishery development should devolve on the Central Government. At the Fisheries Conference held at New Delhi in September 1948 one of the resolutions passed reads as follows:— "The Conference is of opinion that in view of the resources in trained personnel, money and equipment which organized research requires and in view of the fact that research transcends provincial and state boundaries, the main responsibility for research on fisheries shall lie on the Central Government conducted either through their own agency or through the provincial and state Governments."

Central Research Institutes

Since 1916 the Zoological Survey of India has often directed the attention of the Government of India to the desirability of establishing a central organisation for research in Fishery and two Officers of the survey as Presidents of the Science Congress reiterated the suggestion. In 1940 the Fish Committee of the Council of Agricultural Research in considering a review of fishery research in India examined a resolution of the Science Congress regarding the need for a central organisation for conducting fishery research and considered the proposal premature in view of the backwardness of the fishery industry! The recommendation was however made that Fisheries departments be formed in all provinces and states and facilities provided for fishery research. In the Memorandum on the 'Post-war Development of Indian Fisheries' prepared early in 1944, Dr. Baini Prasad, Director of the Zoological Survey of India, who has since become the Fisheries Development Adviser to the Government of India, outlined a practical plan for the rational exploitation of Indian waters and laid due emphasis on the collection of statistics and organisation of marine research as essential requisites for initiating a correct plan for the development of Fisheries and recommended the establishment of a separate Central Fishery Research Institute where the work will be Biological, Physico-Chemical, statistical and technological. An Advisory Fishery Research Council composed of a number of experts in Fishery and Biological sciences and representatives of the Provincial and State fishery departments will guide the institute generally. The Rahimtulla Subcommittee have in their report (1945) recommended that the Government of India should take early steps to implement the recommendations made in Dr. Baini Prasad's memorandum. In March 1947 the Interim Government approved a development scheme under which the Central Fishery Research Institute will have 4 main stations and a chain of subsidiary Biological stations. The 4 main stations were to be (1) at Bombay for fishery technology, utilisation of bye products etc., (2) in Bengal for study of inland fisheries, (3) at Mandapam and (4) at Karachi, the last two for marine fisheries. Marine Fishery Research work was started with Dr. H. S. Rao as the Chief Research Officer at Madras and at Bombay with Dr. D. V. Bal as Fishery Survey Officer. The Central Inland and Estuarine station was started at Palta near Calcutta under Dr. T. J. Job who assumed charge in August 1947, as Chief Research Officer and Mr. S. Jones, the Research Officer (Estuarine general). A deepsea-fishing station was established under the scheme at Bombay with Major R. J. Raine as the Superintending Engineer in charge.

17 Means of Transport and Communication.

18 Village Defence.

(b) There will be a well-equipped Library on all subjects for reference and study.

(B) Practical:—

Practical training will be imparted both at the Institute and in the villages. Training in the following Cottage Industries will be given at the Institute:—

1 Hand-spinning and Hand-weaving (Khadi-work)

2 Paper-making (Hand process)

3 Match-making (Hand process)

4 Bee-keeping

Each candidate will be required to undergo complete course of training in at least one of the industries. He will however have the liberty to get a working knowledge of other industries as well, provided he has time for the purpose. In addition to instruction in the technique of each industry the candidate will be given training in the management and keeping of accounts thereof.

Practical training in villages is meant to develop contact with the villagers, to understand their psychology, to develop administrative capacity and to test the principles studied at the Institute in their application to rural conditions. While working in villages, the trainees will specially be initiated in the following:—

1. Survey of village conditions.
2. Planning for all round development of village life on the principles of Economic Democracy.
3. Organisation and Working of a Village Centre on the basis of Cooperation and Self-help.

(C) Study Tour:—

After the students have completed their theoretical and practical training at the Institute, those who can afford, will be taken on an all-India study tour for a period of one month in order to equip them with practical knowledge of nation-building activities at different centres in the country. The expenses of this tour will be about Rs 750/- per candidate.

Hostel Arrangement

The candidates will be provided comfortable lodging in the Hostels of the Institute.

Mess Arrangement

There will be a common mess for the students where two regular meals will be provided along with breakfast in the morning and light refreshment in the afternoon. The food supplied will be vegetarian. To those who like to cook for themselves, there will be separate arrangement.

Monthly Expenses

The monthly expenses of a trainee will come to about Rs. 75/-

Food and breakfast	Rs. 50/-
Training in Cottage Industries & other fees	„ 10/-
Miscellaneous	„ 15/-
	Rs. 75/-

Each trainee will be required to attend to his personal needs and provide himself with necessary requirements. He should bring his own lantern for use at night.

All money for the monthly expenditure of a trainee will have to be deposited in advance in the office by the 10th of each month at the latest. At the time of admission, a trainee will be required to deposit Rs. 10/- as Library security and Rs. 25/- as an amount for special exigencies.

Monthly accounts along with the progress report of the trainees will be supplied to the guardians and the authorities concerned.

Note—Pohri is connected with Gwalior, Jhansi, Ujjain and Guna by Bus services of G.C.I.T.Co. Via. Shivpuri.

For further information write to,

The Principal,
Rural Workers' Training Institute,
Pohri, Madhya Bharat.

THE RURAL INDIA

Vol. XII, No. 3] MARCH, 1949 [Whole No. 121

"Salvation of India lies in Cottages"
—*Mahatma Gandhi.*

THE FOOD DEBATE IN PARLIAMENT

THE food policy of the Government was subjected to severe criticism in the last two-day food debate in the Union Parliament. The debate arose out of two non-official resolutions, one moved by Dr. Man Mohan Das suggesting the appointment of a Committee to investigate the reasons leading to the failure of the 'Grow More Food' Campaign, and the other moved by Shri R. K. Sidhwa to prevent hotels, restaurants, messes and public boarding houses from serving rice to non-vegetarians. The resolutions were however withdrawn at the end on the assurance given by the Food & Agriculture Minister, Shri Jairamdas Doulatram, that the Government proposed to have the whole food problem reviewed at a high-level Conference and consider what means and measures should be adopted to deal with the question in a speedy and effective manner. The suggestions made by the members during the course of the debate would be given due consideration.

Replying to the criticism levelled against the progress of 'Grow More Food' campaign, the Food Minister disclosed that the much advertised campaign was only a *small* endeavour which covered about 5% of our needs and the total area under cultivation. Whereas the Food Grains Policy Committee had recommended the campaign for 9 lakh tons of food grains, it had resulted in an increased yield of 7 lakh tons. Looked at from expenditure point of view, the Food Minister contended that even calculating at Rs. 10/- per maund, they had produced Rs. 20 crores worth of food-grains with an expenditure of Rs. 2 crores. Again, even if an allowance of 50% was made for the inaccuracy of figures, they had by spending Rs. 1 crore produced Rs. 10 crore worth of grains.

The figures given by the Food Minister speak for themselves. But how far they may be relied upon, it is difficult to say; for, the way in which figures are collected do not much warrant their accuracy. The general impression of the public as well as of their representatives in the Parliament, as voiced by them during the course of the debate, is that the "Grow More Food" campaign has been a huge failure in as much as its effects are not marked in any appreciable increase in food production to meet the deteriorating food situation. When hunger stalks the land, the Government must deal with the question in a *big* way as the Hon'ble Food Minister himself accepted.

Our imports of food-grains from foreign countries are rather increasing instead of decreasing by our efforts. Whereas our imports of food-grains in 1948 were 3 million tons, the Government has already made arrangements for the

import of 4 million tons this year and still the deficit remains. The members of the Parliament were correct when they said that the food problem has assumed the proportions of an emergency in the country and the Government must give its foremost consideration to it to relieve the threatening situation.

Shri Jairamdas Doulatram said that 'it appeared they were diverting more money, man power and technical skill on directions other than agriculture. They must revise their policy. To-day only .8% of the budget was spent on agriculture. They must give top priority to agricultural schemes and plan and spend more money.' If we do not wish the situation to go out of our control, there is no other way but to act on what the Food Minister says.

Shri Ananthasayanam Ayyangar pointed out that whereas Japan produced 3000 lbs. per acre, India produced only 900 lbs. of grains per acre. The Food Minister agreed with him, but asked what could be done to improve it. The members of the Parliament made various suggestions to improve the food situation in general. Some of these suggestions were—setting up of a central Agricultural Commission or a Board of Development with branches in provinces; starting of an agricultural finance corporation; organisation of food councils and cooperative societies; provision of facilities for seeds and manures, tools and implements and other agricultural machinery including tractors; adoption of collective and cooperative farming; research for the control of rust and other pests and diseases; arrangement for reaching the results of researches to the cultivators; etc. All these suggestions are no doubt valuable and deserve due consideration and action.

But the Food Minister pointed to a number of difficulties that came in the way of execution of such suggestions. He said that agricultural financial corporation could not be set up because of financial difficulties. Distribution of seeds to lakhs of villages was a problem. The availability of fertilizers and tractors was restricted because of our dependence for them on foreign countries. The production of steel in our country was also limited. The results of agricultural research could not reach the villagers because of a 'missing link' between the cultivators and the Government and the research stations. The lack of trained personnel was evident. The transport difficulties were still there. The Government was not prepared to spend as much money as was needed to execute the various schemes. So the whole problem was fraught with countless difficulties; and above all, agriculture was a Provincial subject, the responsibility of which did not directly fall on the Centre.

This is a baffling situation. As a drastic measure to meet it, some of the members of the Parliament even went to the length of suggesting that a man of the stature of either the Prime Minister or the Deputy Prime Minister should assume control of the Food Department. As to the difficulty of agriculture being a Provincial subject it was pointed out that the Centre could assume powers to deal with Provinces that failed to carry out its policies.

There is no doubt that the critical food situation in the country calls for immediate and effective steps to be taken by the Government, and we hope, the high level conference referred to by the Food Minister will view things in their true perspective and set up adequate machinery with sufficient powers to execute its recommendations.

One of the serious defects of our organisations in the past has been that while our machinery at the top may be somewhat perfect, it is the weakest at the lowest level. It fails to touch the real man - the cultivator of the land. While speaking about the six nation-building departments of the Government—Agriculture, Cottage Industries, Cooperation, Education, Health and Veterinary—Dr. Pattabhi Sitaramayya, in his presidential address at the Jaipur session of the Congress, drew pointed attention to the same weakness in their organisation and said:

"These departments grew up as noted from 1919 with Directors for the Provinces, district and taluk officers for districts and tahsils. They, however, ceased to exist below the taluk level, with the Health Inspector, Agricultural Demonstrator, Educational Inspector, Veterinary Officer, Cooperative Inspector and Industrial Supervisor. The Directors of these departments passed on their ideas in the shape of circulars to the District Officers who in turn passed them on to the Taluk Officers and there the circulars stagnated.

"The strongest link in the chain should have been the last link from the taluk to the village, but this became the weakest link."

Complaining of similar defect in the 'Grow More Food' campaign Shri Tirumal Rao said that the 'Grow More Food' campaign was confined to cities only. 'In restaurants and Railway stations and street cars one found propaganda being carried on for growing more food. But in the villages where food grew, there was no effort made to grow more food'.

Pandit Hridaya Nath Kunzru also pointed to the same defect when he said that 'it was necessary to make proper approach to the cultivator on whom alone the success of the grow-more-food campaign depended. But so far as he had been able to ascertain, the importance of obtaining the cooperation of the cultivator had not received adequate attention.'

The Government would do well to avoid this mistake in future and rectify it wherever it exists at present.

Unfortunately, somehow, we leave out of our consideration, either for fear of large scale organisation or due to our ignorance of real conditions in the country's side, that even without imports of large-scale heavy machinery and fertilizers from foreign countries, there is still much scope for development of agriculture in the country. We neglect the real man, the cultivator who if given proper incentive, education and knowledge coupled with certain facilities for things beyond his personal capacity, is capable of effecting remarkable improvement in production. One example of such improvement is provided by the experiment conducted at Deori Village Centre by Adarsh Seva Sangha, published in 'the Rural India' for December, 1948.

As for the 'missing link' between the cultivator and the Government there can be no better organisation than our Village Panchayats aided by constructive workers and modelled on the lines of District and County Agricultural Executive Committees set up in Britain at the outbreak of World War II, which are reported to continue still in peace time because of their remarkable achievements.

Fishery Research Workers

One of the recommendations of the Rahimtulla Subcommittee was, "arrangements be made both in the country and abroad for the training of the necessary staff required for the Central Research Institute and for the provinces and states." The recent impetus which has resulted in the opening of Fisheries sections and even departments in provinces and states which lacked them previously—Saurashtra has now a Director of Fisheries—would absorb any number of trained and qualified men. Besides sending selected candidates to Universities overseas under a scholarship scheme the Government of India arranged for courses of training at Calcutta in freshwater fisheries and at Madras in marine fisheries. The first course which began in both the places early in 1945 has been followed by others, the present course of 10 months being under the charge of the Chief Research Officers at Calcutta (Palta) and at Madras. The National Institute of Sciences awards fellowships, senior and junior, some of which are for fishery research and a senior fellowship was awarded to Mr. Pillay, the Assistant Director of Fisheries, Okha (Baroda) in December 1948.

Research and Publicity

Our fishermen as a class though thriftless and intemperate, cannot be said to lack in intelligence nor ancestral fishery knowledge. What they need is that the benefits, scientific research has conferred on fisherfolk elsewhere should not be denied to them. Kathiawar fishermen, for instance, 'associate scanty catches of fish with clear water' connecting in a hazy way disappearance of shoals with poorer plankton. So fishery investigations including planktonic studies if carried out by the State and results with predictions of success or otherwise of particular fisheries made available to the fisherfolk that would do much to revolutionise the industry. What is essential therefore is that all information from and around the Fishery research stations should be pooled for the consumption of all interested in the industry, fishermen and merchants. Informative articles couched in popular language should let the people know the results of scientific investigations. In Baroda though research is recognised as a legitimate and important part of the work of the fisheries department, by the enlightened and progressive Government, still I as the head of a small and temporary department against which there is a prejudice which breaks out as a hardy annual in the State Legislative Assembly—the Retrenchment Committee have recommended the closure of the department—have to be careful in choosing subjects for our scientific investigations and so direct them generally towards problems of practical value and immediate interest. Results of research embodied in bulletins usually published in English, e.g., on the pests of dried fish and simple means of getting rid of them, Putrifaction of fish and its prevention, Fishery bye product industries are also published in Gujarathi. It is indeed good news that the Government of India are taking steps to set up a scientific Information service. The Fisheries Conference at Delhi recommended a Bureau of Research Information to be set up.

Prospectus of The Rural Workers' Training Institute

ADARSH SEVA SANGHA, POHRI, MADHYA BHARAT

1949-50

Object

THE object of the "Rural Workers' Training Course" is to give thorough grounding to rural workers, both men and women, in theory and practice of rural development. The training while embracing all-round development of village life, will particularly, initiate the trainees to the methods of Planning on the basis of Economic Democracy, Social Security and Village Administration to meet the five essential requirements of the villagers—Food, Clothing, Housing, Health and Education, including Means of Communication.

Period of Training

The period of training will be of one year from the 15th of April, 1949 to the 14th of April, 1950.

Qualifications for Admission

The candidate wishing to join the 'Training Course' should have the following qualifications :—

1 He should have faith in the establishment of a new World Order based on the principles of Economic Democracy.

2 He should be prepared to live and practise the three principles of Economic Democracy; viz., Service Motive, Planned Life and Full Employment in his every day life.

3 He should be inspired with patriotic love and zeal for the service of the villages and be imbued with a desire to improve them at personal sacrifice.

4 He should have a good knowledge of Hindi and English to be able to follow lectures in both the languages. His educational equipment or general ability should be that of a graduate standard.

5 He should be a non-smoker.

6 Wearing of Khadi is essential.

7 He should strictly observe the discipline and the daily life of the Institute.

8 He should be of good physique capable of putting in hard manual labour. He should instinctively be a lover of hard life and be able to withstand the privations of life in villages.

Course of Training

A **Theoretical:—**

(a) The following are the subjects for Study:—

1 Theory and Principles of Rural Reconstruction.

2 Principles of Planning for the establishment of Economic Democracy and Social Security.

3 Rural Survey.

4 Village Administration and the Working of Panchayats.

5 Organisation and Working of a Village Centre.

6 Scientific and Advanced Agriculture with particular reference to regional Food Self-sufficiency.†

7 Live-stock Improvement.

8 Development of Cottage Industries.

9 Training in Cooperative Principles and methods.

10 Rural Education.

11 Rural Health and Sanitation.

12 Nutrition and Balanced Diet.

13 Social Aspect of Village Reconstruction.

14 Importance of Moral and Religious Background.

15 Rural Housing.

16 House keeping and Home Decoration.

†Since, the country at the present is faced with acute food-shortage, the students will specially be qualified to raise production potential of lands under cultivation and ensure regional self-sufficiency in foods.

NOTES

ALL-INDIA FOOD PRODUCTION CONFERENCE

Pohri, Madhya Bharat.

Attention of the readers is drawn to the All-India Food Production Conference which is being held under the auspices of Adarsh Seva Sangha at Pohri, Madhya Bharat on the 12th and 13th of April 1949. Shri Jairamdas Doulatram, the Food and Agriculture Minister to the Government of India, will preside. It will be inaugurated by the Prime Minister, Pandit Jawaharlal Nehru. All those who are associated with the movement of raising food production would be well advised to participate in the Conference and help in its deliberations to work out a solution for the baffling problem of food deficiency in the country.

The last food debate in the Union Parliament has cleared beyond doubt that the Government at present has no definite plan or policy to meet the immediate food situation in the country except by imports of food grains from foreign countries. Last year the Government had to spend Rs. 126.6 crores over the import of 2.48 million tons of grains as against 100 crore worth of imports in the preceding year. This year, it is estimated to cost from Rs. 200 to 250 crores over 4 to 4½ million tons. It is a matter of great shame that inspite of our vast agricultural population and rich material resources, we have to go abegging every year at the doors of others and get any sort of stuff at such a tremendously heavy cost. It is unsound both morally and economically.

To stop this huge drain of wealth and to free the country from its dependence on foreign countries for such a primary need as food, there is no other way but to increase food production in the land and make it self-contented. The Government of India have undertaken some multipurpose river projects to this end and have planned for the reclamation of 6.2 million acres of waste land, for which to purchase heavy and light tractors they propose to apply to the International Bank for a loan of Rs. 150 crores. These projects will naturally take time to fruition. And, therefore, such schemes which may produce quick and immediate results are earnestly wanted. We hope, the Pohri Conference will particularly devote its attention to this aspect of the problem. What is exceedingly needed is a country-wide drive for increasing food production with all the available resources in the country.

A WELCOME MOVE

We welcome the move of the Bombay Government to work out Sarvodaya Schemes in compact areas of the Province, for the expenses of which they have provided Rs. 1 crore in the 1949-50 year budget for a period of 4 years. The Sarvodaya Schemes are intended to achieve all round development—educational, social and economic—particularly of backward areas through the cooperation of both official and non-official agencies.

Inaugurating the two day Conference of social workers held at Bombay under the presidentship of Shri Morarji Desai on the 26th and 27th of February 1949, Shri B. G. Kher, the Premier of Bombay, explained the significance of the word "Sarvodaya" as conceived by Gandhiji, which meant not only the greatest good of the greatest number, which is the

principal motto of democracy, but the greatest good of *all*. The Sarvodaya schemes, he hoped, would aim to achieve this ideal.

The plans for Sarvodaya development, it is stated, will relate to agriculture, promotion of cottage and subsidiary industries including cattle breeding, education, social welfare, prohibition, health, hygiene, housing and development of civic responsibility and moral calibre.

The main difficulty of working out the schemes is the dearth of workers, for which it is proposed to open centres to train workers. A committee of 10 members has been set up to formulate concrete plans for training.

We wish the schemes all success. But we would like to point out that the success of the schemes would chiefly depend upon the type of workers that would be engaged to execute them. The schemes too should be drawn after thorough survey of local conditions, giving prominence only to those programmes which benefit the people most and thereby enlist their full sympathy and cooperation. Mere idealism without sense of practicability may ultimately result in abandonment of the schemes.

KEY VILLAGES FOR CATTLE IMPROVEMENT

Establishment of key villages for the improvement of cattle in all the breeding tracts of India was announced by Sir Datar Singh, Vice-Chairman, Indian Council of Agricultural Research, while addressing the plenary session of the Animal Husbandry Wing of the Indian Board of Agriculture in Mysore.

Sir Datar Singh said that the key villages were intended to be compact areas where concentrated work of improvement could be done for a number of years under proper control and supervision. It was estimated that a network of 625 key villages spread over the whole country would serve the purpose of producing superior type of animals in the country at large.

Sir Datar Singh pointed out that inspite of her enormous cattle population of undoubted potentialities India is not self-sufficient in her requirements of milk and milk products. Her imports of milk products are increasing in volume and value. What a pity! India which was a proverbial land of milk and honey in the past has now reduced to such a backward state.

Referring to the adverse effects of partition on our cattle wealth, Sir Datar Singh said:

"The partition of the country has affected our position in regard to agriculture and animal husbandry to a very great extent. Pakistan cattle belonged to the well-known breeds of 'Red Sindhi', 'Tharparkar', 'Sahival', 'Dhanni', and 'Bhangnari.' The first three breeds have been used extensively in India either as pure breeds for milk production or for the grading up of local inferior cattle in backward areas of the country like Assam, Bengal, Bihar, Orissa and the west coast of Madras. Although we can still get a few animals of these breeds the supplies are limited and their procurement is hedged round by complicated conditions of inter-Dominion trade agreements. We are therefore, compelled to depend more and more on our own resources, to develop with extra effort if necessary."

Continuing Sir Datar said:

"The general effect of the partition was that about a third of the total cattle population had gone to Pakistan. The average quantity of milk available per head of human population was 5.5 oz. a day in undivided India. The corresponding figure for India and Pakistan now were 5.2 oz. and 6.8 oz. It is necessary therefore, that we take up cattle improvement work with re-doubled vigour. It should be our endeavour to develop our cattle in such a way as to enable them to supply atleast half the minimum nutritional requirements viz, eight oz. per day per head of human population."

The importance of improving our cattle wealth both for milk and draught purposes can hardly be over-emphasised. The Scheme of key villages adumbrated by Sir Datar Singh, we hope, would soon see the light of the day.

THE ROLE OF COTTAGE INDUSTRIES IN PLANNED ECONOMY

Inaugurating the Central Institute for Training of Instructors at Bilaspur on the 19th of February 1949, Shri Jagjivan Ram, the Labour Minister to the Government of India, emphasised the role of Cottage Industries in planned economy. He said, "If we have to fulfil the demands of planned production, planned distribution and everything that planned economy implies, we can on no account ignore cottage industries. They play a vital role".

Shri Jagjivan Ram said that he did not share the view that only large-scale industries would guide the country towards progress. The place of cottage industries as complementary to heavy industries could not be overlooked. They would help to solve the problem of unemployment and shortage of labour. We fully agree with the views of the Labour Minister.

The Central Institute for Training of Instructors is the first of its kind in the Indian Union. Its object is said to be to raise a pool of efficient instructors of requisite standard to meet the requirements of Central, Provincial and State Governments and even private institutions engaged in imparting technical and vocational training. The training is completely free. We pray for the success of the Institute.

IMPROVEMENT IN WORLD FOOD POSITION

The following is a heartening news of the world food position in 1948-49, which shows a substantial improvement over that of the last year :

According to experts, the U.S.A., Canada and Russia are together likely to have an aggregate surplus of well over 30,000,000 metric tons in the current season after making allowance for normal carry-overs.

The Food and Agricultural Organization has however, sounded a note of caution that the improvement is due to a peculiarly good harvest this year, that the world is still far too much dependent on North America for its food supplies and that the world stock position is still far from being above the bearest minimum required.

Europe's wheat crop last year has been one of the best since 1939. The preliminary crop estimates in Europe excluding Russia in 1948 put the figure at 37,500,000 tons as against 24,400,000 tons in 1947.

Czechoslovakia, France, Sweden and the U.K. have made rapid recovery and their estimated production in 1948 is substantially above that of last year. The yield per acre of wheat in the U.K. has risen to 37·1 bushels as against a ten-year average of 34·9 bushels.

Among the exporting countries the U.S.A's winter wheat crop of 26,300,000 tons this year is the second largest on record. After internal consumption and export, it is estimated that the U.S.A. may have a carry-over of about 7,400,000 tons on July 1 as against 5,200,000 tons last July.

In spite of the improvement in the overall food situation, the pressure of demand on U.S. supplies is still likely to remain high. Controls on the allocation and movement in foreign trade are, therefore, likely to continue.—Globe.

DODD'S APPEAL FOR MAXIMUM PRODUCTION AND AVOIDANCE OF WASTAGE

In a broadcast from Delhi, Mr. Morris E. Dodd, Director General of F. A. O., appealed to the Indian farmers to make an endeavour for maximum production and avoid wastage which nullified production to a great extent. He said:

"If, at this time, every farmer endeavoured to produce the maximum that he could from the piece of land that is his responsibility, excellent results could be achieved. Even a ten per cent increase in production would mean reducing considerably imports of foodstuffs into India.

This is a worthy aim and I wish to commend this to each and every farmer in the country".

Stressing the importance of conservation in "the mobilisation against hunger", Mr. Dodd stated that mere production would not bring the desired results. It was necessary that what was produced was properly distributed and none of the grain that was produced was allowed to be wasted. Mr. Dodd estimated the annual losses in rice in the world due to pests, insects and unsatisfactory methods of preparation in homes at twelve million tons. He said, "If every one of us made a determined effort to prevent the waste of available rice, it would yield immediate and most encouraging results."

World Situation

Giving an overall picture of the world food situation, Mr. Dodd said: "Two-thirds of the world's people are under-fed, though two-thirds of the world's population are farmers. During the last hundred years more people have died of hunger and famines in the Far East than from any other causes. Productivity of land is declining due to soil exhaustion and erosion.

"Yet it is not necessary for us to be overwhelmed by this gloomy picture. There is enough land in the world to produce food in abundance for all. There is enough technical skill and know how, which makes me confident that the farmers of the world can meet the challenge of hunger successfully."

Need for Global Strategy

Mr. Dodd said that the conquest of hunger called for a global strategy and that abundant food for all could only be achieved by the determined and concerted action of all nations of the world. "In fact", he added: "the 58 Nations of the world have an effective instrument with which they can work for the noblest of all human causes—food for all. Food is becoming more than ever one of the great pre-occupations of our time and the challenge to nations to take effective action becomes sharper each year. With your help, I am confident that this challenge will be successfully met not only in India but in every other country."

PLAN FOR INTEGRATED DEVELOPMENT

Presiding over the 19th annual meeting of the Central Board of Irrigation, Shri A. N. Khosla advocated for a plan of integrated development so that simultaneous progress could be made in all spheres of life. He said:

"The first place in order of priority, would naturally go to the conservation and utilisation of water resources, through river valley development, thus providing the basic tools for national advance and self-sufficiency; that is, flood control to release more lands for productive cultivation, irrigation facilities to grow more food, large scale generation of hydro-electric power to turn the wheels of industry and navigation facilities for the transport of the products of agriculture and industry.

"The next in order of priority, should come the manufacture of hydro-electric machinery, setting up of iron and steel factories, cement mills and the manufacture of synthetic petrol, fuel oils, fertilisers and other essential commodities. At par with the above will be the land transport facilities, particularly the extension of railways to sources of raw materials and manufacturing centres.

"Further, development must be inte-

weighing of the various pros and cons is a delicate problem which often demands a close study and careful thinking.

Having produced the agricultural products, the problem of industries comes in. The processing of the agricultural products provide the occupation needed by the people. The Agro-industries are themselves bristling with all manner of social relations. We cannot increase the benefit of one section of the community at the cost of another. The poising of the balance requires considerable detachment and knowledge of human affairs.

The rural economic problem does not stand alone but gets inter-woven very early in its history with the urban demands which in its turn again raises many social problems. The inter-relationship of the rural with the urban population, the rights and duties of the producer and that of the consumer and the privileged position of the middlemen, all these require careful analysis.

In the setting that prevails today money economy has to be balanced with the commodities that it professes to exchange, the balance of benefits should be rightly struck not allowing any unfair advantage to the possessor of the "filthy lucre".

The question of fixing the prices of agricultural products on the basis of costs has not yet been tackled properly.

The land tenures prevailing all over the country form a kaleidoscopic design. They call for reforms.

In a measure we may say that our rural life does not begin and end in the villages, but has its repercussions the world over. It may affect the life of nations thousands of miles away from us either for good or evil, peace or strife.

When we talk of reconstruction we must remember that the foundation should be truly laid and no foundation can be secure unless it is on the rock base of morality and character. When the economic life of a village is properly set, it should be so tuned as to produce model citizens who will function, not only in their limited spheres satifactorily, but will be able to lead the urban life in the way it should go and ultimately also point to the direction in which international affairs could be settled satisfatorily. *Rural reconstruction, therefore, is a responsibility the burden of which few realise. It is a fundamental thing on which the future of nations and civilizations will have to rest.* This lays a tremendous responsibility on the shoulders of those who have been enjoined to lay down the principles and lines on which to proceed.

Many city folks imbued with ideas of rural development think that transplanting the city or town into rural parts will bring satisfaction to the villagers. We must remember that our rural problems are different from those of Europe that can be solved by the Western approach. Just introduction of Western games, cinemas, etc. and setting up of tea clubs and pastimes like cards and racing will not fit in with our rural life. This may have a place where nerves are overstrung by an unbalanced system of work by centralized industries, but where we seek to introduce relaxation to people who are already heavily taxed by out-door manual labour, these solutions will not answer the problem.

Rural Social Welfare

It has already been pointed out that social welfare does not merely consist in

doing philanthropic work. Of course, charitable ministries are desirable outlets for the development of the personality of certain types of individuals, but the social work that we should bear in mind has a wider base. It deals with laying down the blue print of the society of tomorrow. How can we build a stalwart nation on a flimsy social organization ?

While we need the short term policy in social work, the long term considerations should have a definite priority, specially in rural parts. The short term policy has much in common with the rural and urban social welfare.

The social worker should be a humble servant seeking to give expression to his own personality. He must feel that through social work, he is not only benefiting somebody, but to a greater extent also helping himself to a richer life. Our life is not the animal existence within our section. It has to reach out to the four corners of the world. We shall throb with life only when we sublimate ourselves into the joys and sorrows of our fellowmen, in the first instance, in our neighbourhood and through them the world over. Unless we approach our social work with this wider outlook it will not be of any great value from the point of view of national reconstruction.

No social work is as important as the education of children, who represent the future hope of the nation. They have to be built up physically, morally and spiritually while they are still young and their training should take the form of life itself. The system of Basic Education, enunciated by Gandhiji, is an attempt to build up the youth of the nation through harnessing creative element in economic activity, so as to afford them scope also for their moral and spiritual growth. This is the foundation on which we can build up our future citizenship. Hence it is a matter which should receive our earnest attention.

Panchayat Organization

India at her greatest was so because her solidarity and unity was the outcome of village Panchayats. The greatness of India was due, in no small measure, to the village Panchayat. There it was that her public men were trained in taking up responsibility. Here they learnt their A. B. C. of public life. Unless we revitalise this system it will not be possible for India to take up her role amongst nations with any great purposeful goal.

The Panchayats should provide for the long term outlook that should govern our economic policy. It should take care of the common community welfare of the village. It should look after the various conditions which will contribute to the better production on the economic side. It should be able to adjust social differences which may arise in any community. It should organize the education of the young. It should bring the village itself into organic contact with the neighbours, so as ultimately to knit together the country in a regular network of organizations that work towards a common goal.

The Panchayats in the modern world would assume the role that a cabinet plays in the democracies of the West. There will be portfolios to control the various departments of life—health, economic activity, social organization, political adjustments, education, etc. and will form the training ground for those who will one day play their part in the central councils of nations. Hence the programme we lay down for the rural areas

grated so that all related phases may advance in step. For instance it will not do to generate a million killowatts of power without at the same time setting up the necessary industries and other rural and urban undertakings to utilise that power."

Shri Khosla said: "The ideal arrangement will be to have the various projects staggered in point of execution so that while peak construction activity is proceeding on one or two projects, there will be only preparatory work and lesser construction activity on the others. Similarly as the peak activity starts tailing off on the former, the work on the latter should get into peak stride.

Shri Khosla added: "Planning should be regional and total so as to cover all related purposes in any particular region. Planning should not be confined merely to one or two five-year periods. It must extend much farther ahead. The work of development of river valleys in India will be a continuous process. It will not end in 20, 30 or even 40 years.

"Our first aim should be to provide each region as quickly as possible with one completed project or part of a project adequate to its immediate needs and then build up in course of time to total development.

"Total planning does not preclude partial or stage development. It will be desirable to undertake construction of a part of the total plan to achieve quick results and at small expense of available resources but with the clear understanding engaged, such partial development will be an part of the total development and tional train no stage in conflict with pletely free. We p it will be possible to the Institute. imultaneously, expe-

IMPROVEMENT ut straining, beyond

FOOD POSI resources in men,

The following is a ' of the world food positi

SYMPTOMS OF DEFLATION VISIBLE

Addressing a meeting in the College of Commerce, Delhi, Dr. P. J. Thomas, Economic Adviser to the Government of India, Finance Department, remarked that Inflation in India is on its last legs and there are visible signs of impending deflation—growing tightness of money market, continued stagnation in investment markets, accumulation of stocks, growing unemployment, etc. He warned the black marketers and said:

"We are entering a most difficult phase in which deflation as well as inflation will have to be fought. Unless we bring commodity prices down, although slowly, there may come about an economic crash, with all its injurious consequences. Food scarcity is the core of the present inflationary phase in India and the U. N. Survey view that inflationary pressure in India is due to budget deficit for financing public investment is a gross exaggeration. The world food position has improved substantially and black-marketers in India must beware."

Continuing, Dr. Thomas said: "Recession in prices may discourage production and unemployment, but will restore economic health. What is more, it will provide a suitable opportunity for launching the long-term economic plan for India, which has long been held up owing to adverse circumstances. The worry is to find the large funds needed. Assuming that our needs of external finance will be met by loans from the World Bank, we will have to raise funds internally for the rest of our capital expenditure, and as borrowing from the usual sources has failed, funds must come largely from the savings of agriculturists and small traders whether by voluntary savings, compulsory borrowings or a sizable budget surplus."

RURAL SOCIAL WORK AND RECONSTRUCTION*

By: J. C. Kumarappa

The Economic Aspect

It is but right that the economic activities of the people should have been given the first place, but it must be remembered that it is only an aspect of the whole life of man. In this sphere we have to take into consideration the moral, social and spiritual implications of all economic activity. We cannot set aside economics as a thing apart from the higher life of man.

Work has two functions. It perfects the worker on the one side and produces material goods on the other. The former, which is the more important of the two aspects, is often lost sight of. The present day western economic programme has ignored it altogether and has laid all its emphasis on the material products of work.

What play is to the child that economic activity is to the man. By play the child develops its muscles, co-ordinates its nervous system and makes its mental calculations, understands speed of movement and gets acquainted with the properties of the material world.

Similarly, the activity of man should be so organized as to give him scope to develop himself and in so doing, his activities should be co-ordinated with those of his fellowmen. This will raise all manner of problems which arise in society leading to various considerations of values to be used in gauging the relative merit of human life in the economic sphere. However much we may like to look at the economic aspect of life as merely a wealth producing department, we cannot ignore man's higher nature. If we attempt to do so, ultimately we shall be laying open fissures which will widen out and ultimately bring down the whole structure.

The main activity of man consists of satisfying his primary needs. That means production of materials which will go to feed, clothe, and house him.

The food itself should be such as to provide for a healthy natural growth. It should have all the needed elements of a balanced diet.

Here our considerations will centre round his agricultural life where he comes into close touch with nature from which he draws not only nourishment but also inspiration for his higher life.

This will raise a number of problems of co-ordinating the peculiarities of nature in our country with the life of man. For instance, the major part of our country is depending on the monsoon. This sets the pace of life in the villages. It is a great clock which often loses time and frequently makes the man miss his opportunity and creates a whole lot of problems. It is, therefore, essential for us to study carefully the villager in relation to nature, his resources and his needs. We cannot separate these and try to solve our problems on the laboratory basis under conditioned circumstances. If we do we shall have the guarantee of failure. In many of these questions we cannot take a decision easily because they bristle with so many considerations. The

*Relevent portion of the address delivered by Shri J. C. Kumarappa, organizer and Secretary, A. I. V. I. A. as Chairman of the Rural Social Work and Reconstruction Section of the Indian Conference of Social Work, held at Madras in December 1948.

today will reflect the political life of the nation, not only in our own land, but will also make itself felt in the councils of the commonwealth of nations.

Flood And Famine Relief

In the earlier parts while dealing with the economic aspects of our life we have dealt with agriculture as the basic occupation of men. One great obstacle in realizing our ends through agriculture are floods. These can be controlled provided cooperation is forthcoming. A great many floods are due to the carelessness of man. Each man has striven for his own benefits with the result forests have been cut down, lands have been allowed to be eroded, bringing famine in the wake. Today we are facing these problems not only from time to time but perennially, taking the country as a whole. Therefore, part of our rural reconstruction is to solve this problem.

Famine today runs side by side with plenty in certain other parts. Our problem is enhanced by all manner of selfishness in man. While people are starving others are holding up the stock to raise prices and to realize the advantage to themselves out of the suffering of their fellowmen. No amount of legislative powers, and no amount of administrative devices will solve this problem without an adequate realization of our social responsibilities.

RAMA RAJ ?

By : R. N. Muttoo

"THE fact is that our society has become effete altogether and what is known as public opinion, which in the ultimate analysis, is the sanction—both intellectual and moral — behind all social organization, has been for long dormant or even dead—thanks to centuries of foreign rule." — Dr. B. Pattabhi Sitaramayya, in the *Rural India* for Jan. 49.

There is a good deal of dis-satisfaction with the existing state of things in India. Black-marketing, corruption, inefficiency, high prices, are some of the things which have given rise to intense and acute sense of wrong. For all things, in the customary Indian way, the Government is blamed.

A wise person has said a very true thing : "A country gets the Government which it deserves" or words to that effect. How brutal in its truthfulness! So let the common man, instead of complaining eternally about the "GOVERNMENT" look within himself for all the ills from which he suffers.

I will also draw attention to the wise words of our present Congress President which I have quoted at the beginning of this article. As pointed out by him, the sanction behind our 'Government' is really "PUBLIC OPINION" and since this is at present dead, the 'Government' is what it is today. Instead, therefore, of wasting our breath on venting complaints against the 'Government' it would be wiser, and more practical, if we attempt to rouse this "PUBLIC OPINION' which is at present asleep or dead. The purpose of this article is just this : to help form healthy and vigorous "PUBLIC OPINION" in the country.

The writer believes that this is a matter of the first and fundamental importance. All other things will follow if we can make our social organization strong and healthy. And unless our social organization is vigorous and healthy, all our schemes of development materially are dead from the start. They never can yield the desired fruits.

The Government of the day, and in fact all the political parties in the country, today swear by Gandhian ideals. It was all along the dream of Gandhiji to substitute, for the "Satanic" foreign government, the Rama Raj of his dreams. It is, therefore, pertinent to enquire what was this Rama Raj. I have no desire to enter into a lengthy discussion of the essentials of Rama Raj, either as Gandhiji dreamed it, or as it is popularly understood by the masses in India. My aim is to point out some of the incidents from India's past history which throw some light on the conception of the people of India, from times immemorial, concerning what they expect from their government.

It has long been the belief of Indians that for all the ills which befall a people, the ruler of the day is responsible and it is he who alone can mend matters. We may re-call the incident which gave birth to Sita. When the lands were thirsting for rain and a great famine was feared through lack of rain, the people held the "KING" of the day responsible. He was made to plough the land himself to obtain water from the gods !!

It is recorded of Rama Raj that when the young son of an old citizen died, he put the blame on Rama, the King. He brought his dead son to Rama and insisted that Rama should bring him back to life. "How can such an in-equitable thing happen in your reign, O Rama? That I should live and my young son should die?" Such was the conception then of Rama Raj in the days when Rama ruled. And Rama had to bring the young son back to life. The Kings of old days did accept the popular view that for the ills of their Kingdom they themselves were responsible.

It has to be clearly understood that the term "Rama Raj" does not presuppose the rule of any particular religion. Asoka, a Budhist, has equal claim to having established *Rama Raj* during his reign. Similarly, the reign of Akbar the Great, and of some other Muslim Rulers in India, had many, if not all, the characteristics of Rama Raj.

Rama Raj denotes a particular attitude on the part of the Ruler. The fact that India today is a "secular State" does not preclude the establishment of Rama Raj in India. All that is needed is the acceptance on the part of the Rulers of certain responsibilities.

Our Premier, or the Governor-General, will not today be asked to plough the fields to bring down the rains; nor will either of them be expected to bring a dead son to life. But, all the same, the incidents recalled by me have the fullest validity today. Their significance is symbolic. All that is needed today to establish Rama Raj is for the Rulers of the day to *accept responsibility* unreservedly for the inequities which prevail during their rule. Let them not try to make others responsible for these inequities. Nor must they attempt to "rationalise" on this all important subject.

The above will hold good if they wish to rule India in the ancient Indian

way, the *Rama Raj* way. There is so much insistence today on "Indianisation" in the matter of dress, language, script, etc., etc. All these things are important in a way; but they are all outward forms, the crusts of our culture. If we take care of the "kernel", the rest will take care of itself. The attitude of Ancient Indian Rulers towards the ruled is such a kernel of our culture. Let this be restored.

Before trying to "Indianise" our dress, language, etc. why not "Indianise" our way of government?

First things should come first.

Mahatma Gandhi used to go on fast whenever any untoward thing happened during his leadership. He realized that for any faults, he as the leader, was himself responsible. This was called the Gandhian way; it was not however a new way. It was merely the ancient Indian way: the way of Rama himself—*Rama Raj*.

RE-ORIENTATION OF AGRICULTURAL POLICY

By: V. S. Agarwala

IN all our discussions of agricultural planning we notice a flagrant disregard of the agriculturist himself. Though all the measures of agricultural improvement will no doubt cluster round him, yet his ownself is entirely ignored except in a few isolated instances. It has been estimated (Chowdhury Mukhtar Singh) that the skill, education, personality and character of the peasant contributes as much as 40% towards agricultural production. He is the commander of his work and when he himself is ill-equipped for the task, how can we expect the best of results.

The agriculturist clings to the soil for there is no other source of income open for him. He has no stake in his land. He has no incentive to exert himself any more than would be sufficient for him to keep his body and soul together. He has no yearning to live a better life. All the calamities of nature he accepts as being his inevitable fate. He lives a precarious existence. He earns anyhow, he eats anyhow. He is the meekest specimen of humanity, the "Poem of Pity". He has desires without hopes and responsibilities without rights. His entire crop is lost between the landlord and the moneylender and possibly with a debit balance. After the World War II it appears that the drain on account of landlord and tenant has decreased appreciably but this seems to be a shortlived relief only.

In any programme of production best results can be achieved only when all the factors of production are of equal efficiency, otherwise the efficiency of all other factors will sink down to the efficiency of the least efficient factor. It implies therefore that undue emphasis upon irrigation, manure, seed and the like and neglect of the cultivator will take us nowhere, for the efficiency of production will not rise unless there is a simultaneous improvement in the efficiencies of all other factors including the cultivator himself. All our plans of increased agricultural production, however well-intentioned, promising and excellent they may be will not fructify, unless the peasant is given the central place. All the measures of the plan should flow from him and not surround him coming to him from all sides. But

this is either ignored or too easily forgotten. The Royal Commission on Agriculture (1927) had laid great stress upon the personality of the agriculturist himself and his outlook as supplying the key to rural welfare and improvement. But this valuable advice has been totally disregarded.

Create such conditions that the cultivator will begin to feel a stake in agriculture, that will provide incentive for putting increased effort in his land. Agriculture should be taken as a way of life, as a way of business it has little chances of surviving. Shake the agriculturist from his slumber of despair and despondency, let him enjoy a feeling of independence, a hope for the coming bright future. One of the main reasons of success of agriculture in America is that the agriculturist there has not yet lost his traditional spirit of independence. "Farming in Europe, indeed is a tradition, a way of life, a civilization and any attempt to regard it merely from the cash aspect, it must fail. The European farmer is attached to the soil by strong ties. There is a longing for farming, but it is a love of the technique of the fine art of individual pursuasion of nature, of immediate contact with the earth and its fruits". (World Agriculture pp. 134 & 140).

Mr. W. H. Moreland while speaking on the "Outlook of the Indian Cultivator" says in the Report of the Royal Commission on Agriculture :—

"It may be affirmed with confidence that the welfare and prosperity of the rural population will not come by technical advances alone. The will to live better will furnish the driving power that is required..... in other words the central problem is psychological not technical..... The dominant feature in Rural India at the present day is that the will to live better is not a force to be reckoned with except in particular circumstances".

Therefore we have to create in him an urge for a better life, change his dismal attitude of life. Lack of ambition is the stagnation of life as Radhakrishnan says, "While virtue is a steady pursuit of something higher and higher, vice is self-satisfaction. The spirit of self-satisfaction is the imfallible mark of an inferior mind. The worst thing that can happen to anyone is to lose the consciousness of the higher ideal..... When they are stilled it's death we live in."

Agriculture is the noblest of all professions, for here a person can maintain highest standards of integrity and honesty. But we the urbanites, the so-called civilized, call the agriculturist rustic and uncivilized and his profession a debased and mean one. He is accorded no social status, as if he is merely meant to minister to the needs of the city dwellers. Surprisingly however, we forget that civilization is not related to grade or profession, but refers to the state of mind. We confuse it with a crazy thirst for new things and a mad race for wealth.

So, we will have to give to our agriculturist his proper place, which is his rightful due but which we forget in our zeal to reform the agriculture by relying exclusively upon the material means of production, and throwing into background a living factor who thinks and feels, has hopes and desires. He is the backbone of the country. He represents what India actually is and any attempt to disregard him in any scheme of agricultural planning would be suicidal. The ideal for the agriculturists should be to resolve to seek "not greater wealth, but simpler pleasure, not higher fortune, but deeper felicity, making first of possessions self-possession and honouring themselves in the harmless pride and calm pursuit of peace". (Ruskin).

MULTI-PURPOSE COOPERATIVE SOCIETIES

By: Prof. Mahesh Chand

"Develop the cooperative movement. Establish cooperative societies". Yet there are pitfalls, loopholes and controversies. Thus, though many agree that at this juncture in the life of our country each and every one of us must follow the motto, "Service above self", we are still apt to forget it. We are also apt to place too many responsibilities on the institutions through which we would develop our countryside without realising what they can accomplish at present. Above all we forget that the cooperative organisations cannot help us unless we accord due place to cooperative education and training. In what follows, light is thrown on these aspects in a lucid manner.

During the last twelve months of our independence, it has once again been accepted on all hands that our development schemes ought to be based on cooperative principles. Collectivism will not help us. Some type of cooperative action is essential. This may be taken either through multi-purpose cooperative societies or single purpose societies. Which of these two forms may be selected? This is a highly controversial question. Yet it is essential at this stage that we must know which one would help us more and to what extent, particularly with reference to the rural areas.

Our needs are not likely to be served by the single purpose cooperative societies. Single purpose societies may be better suited for the urban areas due to concentration of the people there. But in the rural areas the societies are more likely to fail or make little progress if they touch only one aspect of the life of the cultivators. Credit alone cannot secure that close and continuous connection between the member and the society, without which the real cooperative spirit would not be fostered. Non-credit functions also ought to be undertaken by the primary credit societies.

Objections

The arguments advanced against the multi-purpose societies have been mainly three. One, it shall mix up the accounts of the varied activities and thus conceal the true position of any one type of the activity. Two, the failure in one respect might entail the winding up of other useful activities. Three, since the operations would become complicated a few intelligent individuals would come to control the society, and this would be against the cooperative spirit.

But these objections can be met. To a certain extent separate accounts can be maintained for the different activities. In the beginning the keeping of separate accounts may appear too much. If they are not maintained, even then a rough idea of the position with regard to the different activities should not be difficult to have. If a stock taking of the position with regard to the different activities is frequently done, the losses on account of any one activity are not likely to be so great as to necessitate the winding up of all activities of the society. The fear of the control of the society passing into the hands of a few, who might carry the society in non-cooperative directions, arises because cooperative education has been neglected so far; also because it is perhaps assumed that the single-purpose societies would be converted over-night into complicated multi-purpose societies.

Old Views

Even the Reserve Bank of India, with whom the 'multi-purpose society' has been rather a slogan for long, made it clear that "It was not, of course, suggested that the existing credit societies everywhere should immediately assume all the functions mentioned above, but a steady extension should be secured in the scope of their activities so as ultimately to bring the whole life of the cultivator within its ambit. Even so, it was not recommended that such societies should undertake any business involving an unusual degree of risk such as only specialised institutions with special skill could undertake e. g., mortgage banking, cattle insurance, etc. No need some separate societies for specific objects, e. g., prevention of soil erosion, land reclamation, colonisation, irrigation etc., be altogether precluded."

The Madras Committee on Cooperation also expressed a similar view. "If societies expand their activities in the first instance even upto the limits laid down in their present byelaws, we believe that the full-fledged multi-purpose societies will be the next step in evolution."

Cooperative Planning Committee

Recently the Cooperative Planning Committee (1946) also recommended that "as the supply of credit touches only one aspect of the life of the cultivator, the activities of the primary cooperative societies should be so extended as to cover the whole of his life. The primary credit society, therefore, be reformed and reorganised so as to serve as a centre for the general economic development of its members." A perusal of the report gives an idea of the economic activities to be covered by the primary societies. It is not to be a joint village management, as suggested by Tarlok Singh, though experiments in this regard may be carried out in suitable areas. Nor is the primary society to undertake the functions of a fruit and vegetable growing society, nor those of the anti-erosion and the milk society. The primary society is to manage the pasture land and to conserve fodder. They are to distribute the improved seeds made available by the Agriculture Department and the fertilisers, as also to execute the schemes of the Forest Department for the establishment of the fuel plantations. The primary society is to arrange for the assembling and transport of the village produce to the marketing union established in the nearby wholesale mandi. The primary society will give a helping hand in crop-planning. It will encourage the members to grow more leguminous crops and to use green manure. It will also be entrusted with the field work pertaining to canal and tube well irrigation, such as distribution of water, fixation of outlets, repair and maintenance of channels, and assessment and collection of water-charges. The construction of minor irrigation works is also to be entrusted to the primary society. It will be the post office for state assistance for sinking wells. It will undertake store-business. Health and sanitation as well as better living activities are also to be the function of the primary societies. Insurance business among its members will also be promoted by the society. The list is not complete, but it can be summarised by saying that the society is to undertake even technical work to improve the condition of its members both materially and morally.

Registrars' Conference

It seems too much. Compared to this, the detailed functions emphasized by the XV Registrars' Conference (1947) are

better. According to the Registrars, the agricultural primary cooperative society should, in particular,

(a) finance crop production,

(b) act as the agent for the sale of produce to the nearest Cooperative marketing organization,

(c) supply the farmer's simple needs for crop production like seed, cattle-feed, fertiliser and agricultural implements and also consumer's goods like cloth, kerosene, salt and matches on indent basis or on the basis of established needs provided that such a society may be permitted by the Registrar to function on the system of ontright purchase and sale to the extent of twice the paid-up share-capital where its size, financial strength and soundness of management permit,

(d) serve as milk collecting station for the nearest dairy and as a centre for animal first-aid and maintenance of stud bulls,

(e) serve as a centre for maintaining agricultural machinery for the joint use of the members, and

(f) encourage subsidiary occupation for its members.

The Conference has done well by leaving out the technical functions. The provincial governments are organising Panchayats in the rural areas and such functions as crop-planning, irrigation, fuel plantation, management of pasture land and conservation of fodder, which must be essentially and compulsorily taken up, may be left to be taken over by the Panchayats.

The All-India Cooperative Conference (1947) has also taken a similar view. It has not passed any formal resolution on the subject, but the President hinted at it when he said that "a marketing organisation is both a purchase and sale organisation" and that "an industrial society must be a production and sale society".

World Tendency

The emphasis is that too many functions must not be tacked on to the objects of the society. Wherever it has been tried, the results have been far from encouraging not only in this country but also in other countries, particularly in backward countries. Incidentally, the emphasis on the combination of 'financing' with 'supplies' and 'marketing' is to be found not only in India but in other countries too. At one time "Cooperators believed that the credit bank, in as much as it met the most pressing evil, must come first. Now the feeling is that village reconstruction (i.e., non-credit activities for improving the conditions of rural life) must come first." After visiting a number of countries, Prof. C. R. Fay wrote before the World War II, "The writer has recently visited Newzealand, Germany, Sweden and Finland and the emphasis is everywhere on coordination, not indeed on the undifferentiated society, but on the association of finance with trade supplies and marketing..... and on the association of trade supply with the marketing of grain and general produce".

Post-Organisation Complacency

In India credit societies should first be made to supply essential agricultural and domestic requirements and act as agents for the sale of the produce to the nearest cooperative marketing organisation. This is justified from another consideration too. A great hurdle in the progress of the cooperative movement is the post-organisation complacency. We

are enthusiastic to organise a new society; but once it is established, no one seems to be bothered about working it to success. We are office-thirsty and want to march on to fresh organisations. We work under sentiments and our loyalty to the cooperative society is loose and not firm. We have not come to believe in it firmly. This is because we have paid little attention to cooperative education, training and research which are fundamental requisites for the progress of cooperation in any country. *International Syndicate, India.*

SOME RECOMMENDATIONS ON STEPPING UP THE PRODUCTION OF FRUITS AND VEGETABLES IN INDIA

By: S. S. Bhat

The need to step up fruit and vegetable production in India has been urgent for years past. Several suggestions in this regard have been made from time to time at conferences and meetings such as those of the Soil and Crops Wing of the Board of Agriculture in India and the All-India Horticultural Workers' Conference. A review of past recommendations and steps taken to implement them up-to-date will be useful in guiding the future course of action that may be found necessary.

The production of fruits and vegetables may be viewed from at least two different angles. Firstly, the raising of crops which yield bulky kinds of staple food of the country, as in the case of banana, papaya, potato and cabbage and all kinds of indigenous vegetables. Secondly, the raising of crops of a more uncertain and long-term nature as in the case of mango, citrus, litchi, sapota and moringa. Though the latter group may be considered valuable from the protective and vitamin standpoints, the former group is no less valuable as the crops included in it substantially added to the country's total production of bulky foods which is of immediate utility at the present juncture. The programme of development for the country should, therefore, include the production of fruits and vegetables under both these groups for a sound national policy.

The following recommendations are made for the consideration of the ensuing Horticultural Workers' Conference, keeping the above points in view:—

I. New Crops In New Areas:—

(i)Keeping the motto "Grow More of what you can grow easily" before us, crops like banana and papaya should be extended and introduced into new regions and in villages where natural facilities of soil and water are favourable, but where they have not yet been tried on sufficiently large scale. Banana and papaya are crops of undoubted economic benefit, and wherever they are grown, they have yielded high profits. They also require little technical skill and are marketable easily. Once the local cultivators are shown and convinced of their advantages, they take up their cultivation which spreads remarkably fast, as has happened in the Baroda district, where the acreage under banana and papaya has increased 400-500 per cent in the last decade.

(ii) There are vast ravine lands on the banks of rivers, which require to be surveyed and people should be encouraged to develop them. The progress is bound to be gradual, but the results that may be achieved will be substantial. Hardier and long-term plantations of crops like mango, jujube and guava, may be raised in such lands, where no crop is taken at present. Government should give out these lands to enterprising cultivators free of charge and should charge assessment only after ten years' occupation, when the trees may come to bearing. This will bring new area under the plough without encroaching upon areas already under cultivation. Instance of ravine development can be seen at Ranoli of the Baroda district.

(iii) Where possible, new varieties of fruits like grape-fruit, Italian lemon and grape should be introduced and grown. These crops are amenable to be raised easily in kitchen gardens and bungalow compounds in new colonies and town-extensions and help the country's total substantially.

II. Increase Irrigation Facilities:—

(i) Most fruit and vegetable crops depend upon the availability of irrigation water for their success. The Government of the Indian Union as well as local Government are launching large-scale schemes for sinking wells and the construction of dams. Under these schemes wherever new wells are sunk and new areas are brought under irrigation, Government should help people to plant fruits and vegetables by providing them advice, plants, seeds and manures free of charge or at concession rates.

(ii) Oil engines and pumps should be imported or produced in our country in large number, and growers of fruit and vegetables should get priority for their supply on *tagavi* and easy terms of repayment where needed. The difficulty in securing oil engines to lift water has been lately one of the most serious handicaps in our attempt to extend fruit and vegetable cultivation.

III. Other Measures:—

Various other measures have been proposed from time to time that may help to increase fruit and vegetable production in the country directly or indirectly. Planting of fruit trees on road side and village sites as well as on field boundries; the provision of reliable nursery stock for planting; the improvement of orchard efficiency by better cultivation; manuring and fighting diseases and pests; the development of the canning industry; the improvement of the marketing and disribution systems; the organisation of growers for cooperative work; and many other suggestions have been made. It is not known how far any serious attempt has been made on implementing them and what results have been obtained in the practical field. Horticultural research takes time to produce results, and the best that we can do to implement fruit and vegetable production immediately is to launch an all-sided and vigorous campaign to extend planted areas and to increase production with our present knowledge of proved practical merit.

GROW MORE FRUITS

PART II F

By: B. L. Choudhri

(This is the last of the series of articles on "Grow More Fruits." I have taken advantage of standard works on the subject referred to in the text. I express my gratitude to their authors. I very much thank Mr. Percy S. Lancaster, Secretary, the Royal Agri-Horticultural Society of India, Calcutta, who had despite his heavy duties gone through the M. S. and given valuable suggestions. I also thank the Editor, 'the Rural India', who has so generously given priority to these articles.—Author).

19. Papaya (Carica papaya)

The excellent and well known fruit very correctly called the *Amrit-banda*, meaning a pot of nectar, is gradually occupying its rightful place. Due to easy cultivation and early bearing the fruit is becoming very popular. It is a common sight to find one or two plants in almost every compound.

Selection of soil and site:—It can be grown on any type of well drained soil. Open rich loamy soil is ideal for its cultivation. The plant is vigorous growing and profuse fruiting. "Under the best conditions of soil, moisture and heat the plants mature at an early age and produce an abundance of fruits from as low as one foot from the ground. In shaded places or under less favourable climatic or soil-conditions the plants show a tendency to be slender and the bearing is very poor".* The tree can be successfully grown all over the country on a variety of soil, except in places of high elevation.

The plant is very susceptible to water-logging conditions. The root must get proper ventilation. It is, therefore, essential to avoid all places liable to be water logged. Perfect drainage is essential as in its absence the plants become easy victim of the Collar-rot disease. A high lying spot is the best. As a further precautionary measure open drains may be provided in the orchard.

Varieties:—There are various varieties of Papaya. Washington, Honey-dew, Ranchi, Ceylon, and Madhubindu are popular ones. I obtained best results from the Royal Agri-Horticultural Society's Special. Madhubindu is also good but it gives a higher percentage of male plants. Washington type has less seed. It can be recognised by the pinkish colour of the stem. It's fruits are round and narrow towards the stalk end. The Ranchi is a medium and long strain and the Ceylon is an elongated variety. Honey Dew has pale skin even when unripe.

Propagation:—Plants are commonly raised from seed. The success of the orchard depends on the proper type of seeds. Select seeds from the best well ripe fruit from the most desirable type of plant. Remove the seeds and wash them in water to clean them off the gelatinous matter. They should then be dried in shade and used fresh for sowing. If desired, though not advisable, seeds may be stored for future use in well stopper air tight bottles. It is not safe to sow more than three months old seed.

Nursery may be sown in May so that plants are ready for transplanting by the beginning of July. Seeds are slow to

*Kumar L. S. and Abraham A.; Bombay N. H. S. Journal, Vol. No. 2. December 1943.

JL
Y3/m2, N27KU 447.K

germinate and take about a fortnight to three weeks to sprout. Nursery may be sown in a *Kiyari* (plot). Sowing should be done in lines made at nine inches apart. Seeds in the row may be sown at two inches apart. Later when the seedlings are about two inches high they may be thinned to 4 inches apart. This is not very necessary and if desired sowing may initially be done at 4 inches apart. Though transplanting of seedlings is universally followed, it is noted that the plants get a setback and take time to pick up the growth. To minimise the shock to the least degree the plants may be raised in 4 inch pots from which they can be easily transplanted.

Sowing can also be done in Situ. In this case two to three seeds may be sown in each pit prepared and filled with proper soil and manure mixture. Thinning of these plants may be delayed till about 6 to 8 months when they begin to flower. This facilitates removal of male plants.

Layout:—In a small compound, planting may be done in a formal manner. The plant is symmetrical and graceful and can substitute a dwarf palm tree. Planting may be done in a circle keeping one plant in the centre and six on the circumference. Plants may be spaced at 8 to 10 feet apart. Prepare pits of 2′ x 2′ x 2′ in May and fill them with a mixture of soil containing a high proportion of manure. A four inch bottom layer of broken pieces of bonemeal may be given.

Transplanting:—Transplanting should be done in June, July after the first few heavy showers are received and the soil of the pits is well set. Seedlings about 6 to 9 inches in height should be transplanted. A day or two before transplanting nip off all the lower leaves leaving only the top ones. This will minimise transpiration; thereby the plant will be in a better position to withstand the shock. It is advantageous to use a seedling transplanter. In the absence of it care should be taken to dig deep enough to take out the seedlings without damaging their roots. Make holes in the pits deep enough to accommodate the ball of earth without twisting the roots of the seedlings. Press soil firmly soon after transplanting. Irrigate the newly planted seedlings lightly daily for about a week till the plants are established. This is necessary only in absence of rains.

Irrigation:—Soon after the rains the plants need regular irrigation. Irrigate the plants once in 10 days to a fortnight in the winter and once a week or in 4 to 6 days during the summer. The plant is easily damaged by frost. Irrigation should be given if fear of frost coming is felt.

Manuring:—The plant is very exhaustive and requires proper feeding. A liberal dose of cow dung manure in the beginning of the rainy season followed by a top dressing of a mixture of ammonium sulphate and oil cake after the rains, gives excellent results.

Weeding and mulching:—Regular weeding and mulching should be done. This will result in proper aeration of the roots and will stop drainage of soil nutrients through weeds.

Sex problem:—Papaya is a polygamous plant having three main sex types: (i) Male (ii) Female (iii) Male and Female in one i.e. hermaphrodite. Fruits are had only from the last two types. Male plants, as is the nature's design, are needed only for fertilizing the females.

About 10 to 12 plants an acre are enough but in nature there is a general possibility of getting 50% males. This creates a problem of how to get rid of these. This may be done by planting two plants in every pit and later on discarding the male plant when it is identified on flowering. A few authorities are of the opinion that the male plant is very vigorous growing, therefore, discard all the very vigorous plants of the nursery.

†Kumar and Abraham suggest that pollinating a female type with that of hermaphrodite gives rise to plants which are fruit yielding. "Because the hermaphrodite is always heterozygous no pure race breeding for sex could be obtained. The best that could be achieved is to eliminate males by using pollen from hermophrodite to pollinate female flowers. For such artificial pollination, the female flower should be covered with butter paper bags in the bud stage and the day the flower opens the stigma should be dusted with anthers removed from hermaphrodite flowers (also bagged in bud stage to avoid contamination with foreign pollen). Anthers should be taken from flowers just prior to opening, as the pollen is shed at that stage. A single hand pollinated fruit of good size may give nearly thousand seeds and as all the viable seeds would give rise to fruit yielding plants, the trouble taken to ensure controlled pollination is really worth while."

Harvesting:— In tropical climate fruits are obtained all the year round but under Indian conditions fruits ripen in January and are available till May. Fruits should not be completely allowed to ripen on the trees as their attractive colour invites birds—crows, squirrels etc., to feed on them. The fruits may be plucked as their lower tips turn yellow. They are then ripened indoor in straw.

Out-turn:— Papaya plants are found to live 15 to 20 years, but for commercial purpose the life may be taken from 5 to 6 years. They give three best and two ordinary crops. It is better to cut down trees after the fifth cropping. A new garden may in the mean time be started after the third year of the plantation.

During the first fruiting about 15 to 20 fruits are had. In the second, third and the fourth fruiting 40 to 60 fruits are obtained. If the fruiting is very thick and crowded, thinning may be done.

Other essentials:— Ordinarily the tree is a single stemmed one. It is suggested not to allow growth of side branches. A few authorities are of the opinion to top the tree in the fourth year. This will result in the appearance of side branches which will give a greater number of fruits.

The stem of the tree is tender, hence stakes should be provided when the plants are young. The tree is always liable to be blown down by strong wind. The danger is more when it is heavy with many fruits. It is, therefore, necessary to have proper wind breaks for a papaya orchard.

During the rains attend to drainage of excess or accumulated water from the orchard. In the winter months protect the trees from frost and in the summer protect them from getting sun-burnt.

Value of fruits:— The fruit both in raw and ripe stage is very rich in digestive properties. It is highly recommended to tone up the digestive system. Raw fruits may be used as a vegetable or for

†'The Papaya, its botany and culture and uses'. L. S. Kumar and A. Abraham, Bombay N. H. S. Journal, Vol. No. 2. December 1943.

mixing with meat which becomes very soft in the presence of papaya pieces. Ripe fruits are excellent in eating.

Papain, the dried juice of papaya fruit, is an important commercial product. It is obtained by making light incisions on green fruits. The juice exuded from these is collected in porcelain or glass containers and is dried, powdered and bottled for sale. It is an excellent medicine for digestive troubles.

Catch crop:— Papaya being a short lived fruit plant can be best grown as a catch crop during the early stages of mango and other fruit orchards. This will give crop when nothing is obtained from the main orchard.

Pests and diseases:— Fortunately papaya is free from all serious pests and diseases.

20. Phalsa (Greewia Asiatica)

This plant is invariably seen growing as a hedge in a fruit or vegetable garden. The fruits are small and sour in taste. They are mostly used for making 'Sarbet' etc.

Propagation:—Plants are raised from seed. Sowing is done in the rainy season. They may be raised in a nursery or in pots or boxes.

Soil:—Any type except the very sandy one.

Planting:—About two or three years old plants are planted at about 6 to 8 feet apart. Pits are prepared as usual. The best time for transplanting is the beginning of winter season.

Pruning and irrigation:—Irrigation is given soon after planting and then according to the plant's need. Plants are not allowed to grow very tall. Their height is kept at about six feet. Better and bigger fruits are obtained on new shoots; hence after the fruiting is over the tree is severely pruned to about 3 feet height. Its fruits are had from April to June. The plants should then be pruned in the first fortnight of July and manured and irrigated soon after it.

21 Pine apple. Ananas (Ananas Sativa)

The cultivation of pine-apple is not yet given its due in the plains. It is one of the very hardy fruits that can be grown under a wide range of conditions. Due to its early fruiting and dwarf growth and also the natural tendency to grow under shade, it presents itself as one of the choicest plants for inter-cropping in fruit gardens. The fruit is liked by all and is utilised in various ways. Making of Jam, jelly and canning pine-apples is one of the most potent and growing industries of the pine-apple growing countries. The fruit is a well recognised table delicacy. It, besides the fruits, supplies excellent fibre from its leaves.

Climate:—A humid climate is best suited for its growth but the plant soon adopts itself to any climate and can be successfully grown in the tropics and sub-tropic plains. The places having more than 50" rainfall are economical for its growing but good crops can be obtained even under less rainfall if adequate arrangements for irrigation are made. The plant does not thrive well on the hills. At a higher altitude it bears smaller fruits of inferior flower.

Soil:—Well drained sandy loam soils are best suited for its cultivation. All clay soils must be avoided. In heavy clay and sticky soil the roots have a tendency to grow short at the surface only and to form a ball. A slight acid reaction of the soil is desirable. The plants though do well in humid climate and

under copious irrigation, are yet very susceptible to water logging. Soil tending to be heavy should be thoroughly lightened by mixing leaf mould, compost, Farm yard manure or by green manuring. As the plant is a gross feeder this may be taken up as a routine measure for all soils.

Site:—Plants are grown 1. under shade 2. Semi shade and 3. Open fields. Under Indian conditions, however, due to the hot summer months, it can not be raised in open fields. Depending upon the climatic conditions of the place it should be raised under shade or semi shade. It gives best results as a catch crop or intercrop with mango, cocoanut etc. Bamboo shade is also excellent for its growth.

Varieties:—Besides the local acclimatized sour and small fruit variety, there are various standards and finer types worth a trial. The Queen, Spanish, Cayenne, etc. may be grown. 'Kew' is the best and finest type.

Propagation:—Plants are raised by crowns, slips and suckers. The small plants growing on the head of the fruits are called crowns. These can be used for raising plants. Plants grown from crowns are very slow in growth and take about 3 to 4 years to come to fruit. This method is rarely used in commercial propagation but is best suited to raise a plant from a choice fruit.

Slips:—Slips are grown from the buds on the side of the fruit stalk. These are quicker in growth than the crowns. Plants raised from slips take about 2 years to come to fruit.

Suckers:—Like banana, pine-apple also throws suckers from near the base. These are very vigorous in growth and are best for raising plants. Plants raised from these begin to fruit in about one to one and a half years.

Due to these methods of raising plants it is difficult to get a great number of plants at a time. A simple method has hence been evolved for raising pine-apple nursery. This consists of sowing the fruit stalk, like the sugar cane. After removing the leaves cover the stalk to about two inches with the soil layer. Another way to utilise the stalk is to cut ½ inch thick rings of the stalk and treat them with 4% solution of potassium permanganate for about half an hour. The rings are then thoroughly dried and sown in plots at 6 inches apart. Give a soil covering 1" to 1½" thick over the rings.

To avoid irrigation, propagation work is generally carried on in the beginning of the rainy season. A point of great importance is to see that the propagation beds are very well drained.

Cultivation and planting:—As previously explained, it is better to raise the plant under mango trees. Plough the mango garden two or three times during the summer. The ploughing should be thorough but not so deep as to injure the mango roots. Add manure at the rate of about 40 cart loads per acre. This should be thoroughly mixed by light hoeing or *bakhering*. If possible, green manure the garden in the previous year.

Planting may be taken up soon after the first few showers in June, July. Planting should be done leaving 3 to 4 feet of open space round the tree trunk. Plants be spaced 1½' to 2' from one another in the row whereas the rows be made at 2½' to 3 feet apart. For open field planting double row system is recommended. It consists of planting a pair

a web round the base of the fruit and unites it to the stem. The attack is noted only after the full mischief has already been done. The only way to avoid caterpillar is to keep watch on its small blue coloured butterfly which generally comes in during the flowering season, and to bag the flowers. This prevents the insect getting an access to the fruits.

23. Rose apple, Gulab Jam (Eugenia Jambos)

It is an ornamental evergreen tree of exceedingly handsome fruits. The fruits are of small apple form but are of little value as a table fruit. The fruit is of pithy consistency and has a large seed. One or two plants may be grown in an orchard to have a variety and also for the grace of the tree. The tree prefers a moist condition and is best grown on the bank of a tank or canal.

Plants are raised from seed or layering during the rains. Fruits are had in February, March. There is a variety that fruits twice a year. The tree can be successfully grown upto an elevation of 2000 feet.

24. Nase berry-Sapato (Achras sapota)

The fruit is found to do well all over the plains. The tree is of large size hence is well suited for bigger gardens. The tree has ornamental foliage and a well balanced form; hence it deserves a place in every garden. Under favourable conditions it grows to an enormous height even upto 70'. Ordinarily under Indian conditions it grows 20 to 30 feet only. The fruit is of the size of a big lemon with brown coloured rough but thin and tender rind. The fruit contains 3 to 4 shining black coloured seeds of almond shape. The pulp is juicy, very sweet and of pale brown colour.

There are two varieties, one of larger with round fruit and the other of egg shaped fruit.

Soil.-The plant is very hardy and can be grown on any type of soil. However, medium rich and sandy soil is best suited. Luxuriant growth is obtained on loam or sandy loam.

Propagation:—Plants are raised by grafting on '*Khirni*' or '*Mahua*' tree. Generally '*Khirni*' is used as a stock. Layering is also done.

Planting:— Beginning or the end of rainy season is the best time for planting. Plants may be spaced 20 to 25 feet apart.

Irrigation and Pruning.—Plants upto two years of age require irrigation. Once they are well established irrigation need not be given. All dried and sickly branches be pruned back. The tree is of very slow growth and needs very little pruning.

Fruiting—Plants begin to bear after about 5, 6 years of planting and give fruits for about 20 years. There are two main seasons of getting ripe fruits, 1. March, April and 2. July, August. Fruits obtained in March, April are valued. Fruits should be plucked when a brown powder like substance begins to fall from their rind. Fruits may either be kept for ripening in straw and/or booked for sale. They ripen in two to three days. Ripe fruits must be sold early.

MECHANISATION OF AGRICULTURE WITH SPECIAL REFERENCE TO CULTIVATION OF WASTE LANDS*

By: Dr. V. V. Sayanna

"Only listen and understand the talk of the machines.
You, the future Master, you, the Messiah !
With steam, steel and fire, you are allied !
You will capture the globe."

Sadoviev, At the Lathe.

Introduction

Progress of humanity, in the material sense, has been marked by the measure of man's control and mastery over the powers of Nature and the use of its resources through mechanical appliances. Mechanisation in agriculture is only partly symbolic of that continuous process of man's conquest over Nature. It chiefly consists either to replace or assist, or both, animal and human labour in farming by mechanical power, wherever possible. Application of machine methods to agriculture has made rapid advance particularly in countries like the U.S.A., the U.S.S.R., Canada and Australia and some other countries of Europe. Tractor ploughing has dispensed with the wooden ploughs of yore and the need for draught animals for cultivation of land. The combine-drill performs both sets of operations of sowing the seeds and putting the fertiliser simultaneously, while the combined harvester-thresher has simplified the work of reaping and threshing into a joint process and rendered obsolete the use of the sickle, the pitchfork and the scoopshovel. Plant setting, vegetable and small fruit production, hedge demolition and drainage operations, tractor-spraying of the insecticide, cotton picking and even some of the household work of the farmer's families have been increasingly mechanised. The lorries and the railways, the system of elevators and conveyors, have come into general use for transport, marketing and storage of farm products and livestock. Thus in modern agriculture, the farmer is employing machinery in one way or the other in almost all farming operations ranging from breaking up the soil to marketing and sale of the produce of his farm. This is made possible largely owing to extension of electricity to the country side, manufacture of agricultural machinery suitable to farms in varying climatic and geographical circumstances and dispersion of instruction in technical and rural engineering at the agricultural schools.

Progress of Mechanisation in Different Countries

Where the units of cultivation are large, where difficulties exist regarding employment of work animals or manual labour on account of their scarce supply or high costs of employment, and where there is specialisation in the crops grown, without any hindrances such as conditions of land tenure, topography, climate, system of cropping, etc., mechanisation in agriculture has progressed far and wide. But at the other end in countries like China, India and broadly in the greater part of Asia and Africa the response to mechanisation even at present is found

*Paper read at the recent Conference of the Indian Society of Agricultural Economics held at Hyderabad (Dn.)

of rows at 2 feet apart spacing plants at 1½ ft. in the rows. Another pair of such rows are planted leaving a 5 feet space in between. The planting of these pairs of rows is continued till the whole area is filled.

Irrigation:—No irrigation is done during the rainy season. Ordinarily plants do not need irrigation till February, March after which they may be watered as required. Fruit bearing plants need not be irrigated till the fruit stalk has come up. The plants should then be regularly watered every week to achieve full development of the fruit.

Mulching:—Mulching is an important item in pine-apple cultivation. In some of the important pine-apple growing countries paper mulch is practised. In our conditions loose earth mulch formed by light interculture is enough. Attention should be given to proper weeding and mulching.

Manure:—"A very good manure for the pine-apple," recommended by S. Percy Lancaster, "is made up as follows—One ounce of Nitrate of potash, two of bonemeal, two of Nitrate of soda, two of oil cake and one of sulphate of ammonia twice a year, once in March and again in September." A cultivator can best resort to the application of 4 maunds of caster cake, 4 maunds of bonemeal and 4 maunds of wood ash per acre.

Thinning the off shoots:—Like banana, in this plant also too many off-shoots are not allowed to develop as they grow at the cost of the main plant depriving it of major amount of soil nutrients. Only two vigorous growing sturdy off-shoots be retained to each plant.

Harvesting:—The fruit stock comes up in February and the fruits ripen in July, August. As the fruit begins to develop, stakes should be provided. Stakes of about 2½ feet length will serve the purpose. In the month of May tie the side leaves on to the fruit to shade it and protect it from sun burnt. Harvesting of the fruit at the right time is important. Premature fruits do not develop the desired aroma and at times fail to ripen by curing, whereas, over ripe fruits are liable to get spoiled early, hence, they cannot be booked to long distances. As a guiding principle, it is suggested to harvest the fruit as it begins to turn yellow. Cut it with a portion of the stem. Take care that the fruit is not bruised or damaged in harvesting. Fruits are ripened indoor in paddy straw.

Pests and diseases:—The plant is free from pests and diseases. At times yellowing of leaves is noticed. It is generally due to excess of lime or manganese in the soil. Plants are susceptible to frost. Irrigate them as soon as warning for frost is received.

22. Pomegranate, Anar (Punica granatum)

This is a plant which is grown all over the plains. In some places its popularity is more due to the beautiful flower than the fruits. The *Kabuli* variety does not do well on the plains. The local varieties give very small fruit with seeds of larger size, which makes it almost unpalatable. There are, of course, a few local varieties of medium size that give good fruits. Attempts should, therefore, be made to grow these varieties only.

Climate:—A dry hot climate is favourable. The best quality of fruits can be had in places of 'a cool winter and hot dry summer.' Plants do not stand moist atmospheric conditions.

Soil:—The plant is quite hardy and can be grown in any type of soil. "*Kachar*" and loamy soils are ideal for its cultivation. "It is not particular as to soil, though it enjoys a deep calcareous ground and prefers a dry situation to one that is surcharged with wet".

Manure:—Bonemeal manure and old cement mortar or liming the soil are essential. About five pounds of bonemeal should be mixed in the pits prepared for planting. Mixing of a large proportion of bricks broken fine, together with old, decayed cow-dung is also recommended.

Propagation:— Plants can be propagated by seed, layering, gootee and cuttings. Plants raised from seed cannot be relied upon for their qualities. Layer and gootee give plants true to the type. Raising plants from cuttings is very popular. The best plants, however, are obtained by grafting the desired variety on a hardy seedling stock. "A tree that bears fruit of good flavour with as few seeds as possible should be grafted on seedlings, and none but the grafted plant grown. Such trees need no more manure, water, or land than seedlings, yet the value of their fruit is very great in comparison." This advice of Woodrow is sound but not all superior varieties will thrive away from their natural surroundings.

Planting:— Plants of 6 to 18 months old are used for planting. They are spaced at 12 to 15 feet apart. Transplanting should ordinarily be done during the early part of the monsoon.

Irrigate the plants soon after transplanting. A second watering should be given on the 4th or 5th day (if there is no rain). Afterwards irrigation may be given once in a week or ten days according to the season and the condition of plant and prevalent weather. Give only moderate quantity of water as excess of it delays the fruiting.

Keep the soil well forked all round the plant and do not allow weeds to grow. A moderately deep forking (not so deep as to cut the roots) may be done once in every three months.

Pruning:— The plants bear fruits on the new shoots only. Therefore, all the basal shoots should be cut back. The plants have a tendency to throw many shoots from near the ground level. All these must be cut on sight and the plants be made to form a standard umbrella shape.

Fruiting:—The plants begin to flower and give fruits when they are three years old. The first crop is poor. From the 4th year onwards it begins to give more and more fruits till it is fully grown i.e., 6 to 8 years old. A full grown tree may give as many as 400 fruits. Approximate age of a pomegranate orchard is about 40 years but good returns are obtained until the plantation is twelve to fifteen years old.

Renovation:—When a tree has become old and its outturn has fallen, cut down the tree leaving the stem upto about 6" to 12" above the ground. Plaster the cut surface with cow-dung and give a liberal dose of manure. Water copiously. New shoots will soon come out and grow into trees which give fruit for another ten years.

Insect pests:—The fruits are severely attacked by the caterpillar of 'Virochola isocrates', that eats a hole in the fruit. It leaves only the outer skin and feeds on all the inner contents of the fruit. Before pupating the caterpillar spins

very limited due to a variety of factors as the abundant supply of man and animal power available as well as the appalling poverty and general backwardness of the peasantry. The proportion of human to other forms of power (mechanical etc.) to the average worker in all industries estimated in some countries was 5 : 1 in China, 1 : 2 in Japan as compared with the ratio of 1 : 9 in France, 1 : 14 in Germany, 1:23 in the U. K. and 1 : 35 in the U.S.A.[1] In the wheat belt of the U.S.A. almost every farm has one tractor at least and there are more than one in many cases. In France and Denmark too, farms are well-equipped with agricultural machinery and in fact the harvest-binders and reapers are in common use all over, even in small farms. The value of mechanical equipment of farms in the U.S.A. increased by about 2½ times during 1910 and 1930, the value in 1930 being estimated as 3,301.65 million dollars.

The U.S.S.R. is known as the country where machine methods in agriculture are introduced and popularised on an unprecedented scale and rapidity during the two decades[2] following the Revolution. With the success of the collective farms, the number of the State Machine Tractor Stations almost doubled, the number of tractors commanded by them rose to three times and the combines about ten times during 1934 and 1939. Between 1936 and 1939 the number of threshing machines increased by 1½ times, motors 2½, and lorries and cars 5½ times. A large portion of the sowing, threshing and harvesting on the collective farms is carried on by machines supplied by these State Machine Tractor Stations, the remuneration to the work in kind being estimated at 20% of the total costs of the collective farms. The volume of work done by the Stations for the collective farms during the years 1934 and 1939 was as follows:—

	In million hectares. 1934	1939
Total area ploughed	22.2	22.7
,, ,, sown: (a) Spring Crop	6.4	40.2
(b) Winter Crop	4.3	16.4
,, harvested total (Grain)	11.4	44.2
Proportion of above harvested and threshed by combines.	1.6	41.0

Rural Electrification and Mechanisation

Extension of electricity to rural areas in recent years has facilitated the application of machinery to farms more cheaply and more often. Electricity is utilised for the working of such machines as feed grinders, ensilage cutters, seed-cleaning machinery and milking machines and also to furnish lights and power in the farm households and in farm buildings. Rural electrification has made large strides especially in the densely populated regions, and the difficulties encountered due to high costs of installation and

1. Vide, Modern Agriculture by W. E. Grimes and E. L. Holton, Boston, 1940 Ch. XXIII p. 543.

2. See, Year Book of Agricultural Cooperation, Cambridge. 1942 pp. 197–205. Note: In 1939 there were on the collective farms, 66, 476 machine tractor stations employing 394,000 tractors and 127,000 harvester combines. Besides, in the same year there were 5,008,400 ploughs, 708,500 sowing machines, 29,8000 threshing machines, 98,700 lorries, 48, 300 motor cars and 1,247,000 motoring machines & reapers. *Ibid.*

transmission in case of low density areas are to some extent overcome by means of state subsidies and development of the cooperative effort of the people concerned. In fact in many parts of Europe mechanisation in farming has been inseparably associated with electrification of the countryside. Under the R.E.A. (Rural Electrification Administration) electrical service on co-operative lines has expanded reasonably in rural areas[1] in the U.S.A. While only 1/10 of farmers were benefited by electrical service in 1935 when the R.E.A. was established, today one farm in every four is electrically equipped with the result that the total number of the R.E.A. sponsored Co-operatives for electrical service grew to 617 by the end of June 1940. These co-operatives have not only proved that electricity can be supplied at reasonable costs in rural areas but also have served to whip up the private utilities in the regions to cater their service on a comparative basis at moderate rates. Doubtless, where electricity can be generated cheaply, adoption of agricultural machinery run by electrical power will go a long way to bring down production costs and with them the prices of agricultural commodities to the consumers.

Advantages and Limitations of Mechanisation

Mechanisation of farming reduces much of the drudgery of manual labour in certain operations in agriculture, enables the farmer to be more efficient, to produce more, to secure higher incomes and to live a better kind of life on the farm with more leisure. With the expanded use of machinery there will be a contraction in the demand for work animals for ploughing, water-lift, harvesting, transport etc. and a reduction in the need for employment of human labour particularly the labour of women and children. The economies of Mechanisation in terms of men, material and time as well as in terms of efficiency and quality of the work done are too obvious. For instance, in actual operation, costs amount to little when idle, whereas the cost of maintenance of draught animals remains more or less the same during both periods of working and idleness, because the animals have to be fed and attended to whether they are doing work or not. It is therefore advantageous to use tractors when a great deal of work has to be done in a short time or in highly specialised forms of agriculture characterised by comparatively short periods of work at high pressure accompanied by long periods of inactivity. On the other hand, employment of animals works out more economical when the work is spread over evenly over the entire year.[2] The ultimate effect of all these advantages is to bridge the gap between the standards of living in the urban and the rural areas and to establish a degree of equality of labour conditions in the country and town. Some of the limitations for expansion of mechanisation are already indicated. It may be noted that extensive use of machinery, although resulted in displacement of animal labour, could not, in all countries

1. According to the latest Administration Report of the Madras Govt. (Electricity) a good number of development schemes for the generation and supply of electricity to both urban and rural areas estimated at Rs. 9 crores were sanctioned. The biggest amongst them is the Mach Kund hydro electric scheme, a joint undertaking of the Madras and Orissa Govts. All these schemes have to be carried out in a period of 5 to 10 years. Apart from the Tungabhadra project in this province, similar projects of a bigger or smaller magnitude are planned or launched by the Central and other Provincial Governments in co-ordination e. g. the Damodar and the Kosi river projects involve, among other things generation and supply of electricity to different areas.

2. League of Nations' publication No. 7, pp 19-20 (European Conference on Rural life, 1939).

referred to, succeed to the same extent with regard to human labour, perhaps owing to the complicated movements involved and other limitations where hand methods are preferable to machine methods. In this light there is no fear of large scale unemployment of labourers consequent on competition of machines with men. But rather, machinery has served as a powerful auxiliary for the labourers to work more effectively and with less physical strain.

Some Other Considerations

Before this section concerning economics of mechanisation of agriculture is closed, two more aspects of the, question viz., (a) mechanisation in relation to small holdings and (b) mechanisation in relation to employment of labour and wages may be briefly laid down.

(a) *Small holdings vs. application of machinery.*

The question of application of machinery to small farms implies consideration of many aspects, technical, economic and some social. It may be pointed out here that the issue of securing to the small farms some of the benefits of mechanisation should not be confused or identified with the old controversies of advantages and disadvantages of small vs. big holdings or small scale vs. large scale farming. Each has got its own place in agriculture and each has its merits in respective conditions. Since the great depression, the creation and encouragement of family-sized farms has been the feature of the land policies in most countries of Western Europe[1] and in the U.S.A. The expediency of establishment of family farms in hoary and densely peopled countries like India, China and Japan (cf. the favourable factors for certain of large holdings in new and undeveloped countries as Australia, the U. S. A. or under the highly socialist economy of the U. S. S. R.) has been unequivocally recognised by agricultural economists long back. In fact, the size of the holding assumes significance for us with reference to the type of farming adopted e. g. individual, joint or co-operative systems. Though mechanisation appears best suited to large farms, of late there has been a movement for extending such benefits to small and medium-sized farms in various ways. In the first place, the general tendency among manufacturers of agricultural machinery is to turn out machines, suitable to the technical and economic needs of small holdings, possessing at the same time the advantages of large machines. Researches are to be directed for construction of a type of multi-purpose tractor, at moderate prices, which can cater to as many requirements of agriculturists as possible and which can be easily shifted on from one operation to another as they are completed. Secondly, establishment of co-operatives among small farmers for purchase and use of machinery in common is encouraged both by private and state initiative. There were about 30,000 agricultural syndicates or general agricultural co-operative societies in Europe at the end of 1938 for this purpose.

1. A study of the composition of farms according to various size-groups in the countries of Western Europe during 1929-33 shows that the size groups of 2 to 5 and 5 to 20 hectares occupy considerable portion both in number and area of farms. In Germany, 34.4% of farms in the Reich consisted of 5 to 20 hectares. The corresponding stetistics for some other countries are 33% in number as well as in area in France, 38.6% and 56% in Ireland, 26% and 44.4% in Netherlands, 36.3% and 56.6% in Switzerland, 34.2% and 88.5% in Denmark, 32.2% and 41% in Sweden

In addition to these, special cooperatives are also found to fulfil the same needs e. g. there were 283 co-operatives in Estonia and 400 in Finland for the use of machinery, 670 threshing co-operatives in France and 800 in Germany, 286 co-operatives for machinery in Latvia, 133 in Lithuania, 460 in Switzerland and 64 in Yugoslavia.[1] Thirdly, the State has a recognised role in the matter either by way of giving subsidies or by provision of loans at concessional rates, regulation on manufacture and import of agricultural machinery with a view to meet the requirements of the small farmers. The Ministry of Agriculture in Hungary bears 33 1/3% cost of animal drawn machines and 66 2/3% cost of mechanical equipment operated by hand. To ensure satisfactory quality of the machines, a law was enacted in Latvia for the inspection of agricultural machines manufactured or imported. State aid was also given for establishment of machine depots for manufacture of machines suitable for small farms or of specified types. To illustrate the extent of mechanisation of small farms, it may be mentioned that according to the investigations made in Denmark in the year 1932–33, on farms with an area under 10 hectares there were machines, instruments and other implements valued at 235 crowns per hectare; on farms between 10 to 20 hectares 193 crowns per hectare; between 20 and 30 hectares 152 crowns; and on farms between 30 and 50 hectares 128 crowns per hectare; and broadly on large farms the value of implements was assessed at 112 crowns per hectare. On the islands 35% of holdings of less than 5 hectares were noticed using sowing machines; roughly 40% of farms with an area of 5 to 10 hectares used reapers; threshers were used on 70% of holdings between 5 and 10 hectares; 30% of small holdings between 1.7 and 3.3 hectares had threshers.[2] This widespread use of machinery in Denmark in relation to the cultivated area is attributed to the existence of small and medium-sized farms.

(b) *Mechanisation vs. agricultural labour and wages*

Pessimists frown at extensive use of mechanical power in agriculture as they fear that it may lead to colossal unemployment in rural areas and a decline in the wage-rates. Such were indeed the predictions made by some prophets at the beginning of the Industrial Revolution and the introduction of the spinning wheel, the automobile and the steamer not to mention the invention of the rifle and the gun-powder! In fact, there are not a few who hold even now that introduction of machinery is one of the major causes of all recent troubles of over-production, or strained relations between employers and labourers in agriculture and elsewhere. Making allowance for personal prejudices, it only indicates the failure of such individuals for grasping and analysing properly the nature of the

If the two size groups of 2 to 5 hectares and 5 to 20 hectares are taken together, they represent 24.7% of the number and 66.6% of the area of farms in Belgium, about 33% in both number and area in Italy, 42.7% and 74% respectively in Norway. *Vide* The International Review of Agriculture, March 1943, p 81 E.

Note:—The first noticeable fact is that in spite of the predominance of small holdings, considerable progress has been made in all these countries with regard to technical progress in farming. This, indeed, is a sufficient answer to those that are sceptical about the scope and success, of application of agricultural machinery in India.

1. Vide L Action co-operative en milieu rural. Study prepared by the Co-operative service of the International Review of Agriculture, Vol. XXXIV, No. 3, P. 108E.

2. Vide Denmark, L' Agriculture, Le Conseil dell Agriculture Copenhegen, 1935, Quoted Ibid P. 199E, (1 hectare= 2.4 acres.)

problems and their causes. Quite the contrary, the adoption of machinery for agriculture has made good for the loss of labour absorbed by industries and towns and the flight from land faced hitherto in some countries. Introduction of machinery has enabled the worker to produce many times more than what he can otherwise do by hands. According to estimates made in the U. S. S. R. an individual farm required 20.8 days of a man's work to produce one hectre of grain in 1922–25 and a collective farm 10.5 days in 1937. Similarly, while an individual farm required 3.2 days in 1922–25 of a man's work for producing 110 lbs. of grain, only one day was needed by a mechanised collective farm to do the job in 1937. It is evident that as a result of mechanisation the productivity increased approximately threefold in these cases. As for wages, it is a matter of common knowledge that in the face of Motorisation of agriculture, the wages of labour have registered a rapid rise and continue to do so leading to a rise in the general standards of living of the labourers during the last half a century. In fact the low wages and low living standards in the countries of the East and the middle-East are ascribed to the inefficient methods of farming and for want of technical progress made in agriculture.

PART II

Scope for Mechanisation of Agriculture in India

It is often contended—in fact, many times taken for granted—that although all that is said about mechanisation in the preceding section may be alright with reference to other countries, it is definitely impracticable, unsuited and still more, harmful to Indian conditions of agriculture. Therefore, an attempt is made in this section to examine the scope for mechanisation of agriculture in India under some of the following headings in their baldest form viz. factors favourable and unfavourable, attempts for introduction of machinery and the government policy, and lastly mechanisation vs. the "Grow More Food Campaign" and cultivation of waste lands, while in conclusion some of the main recommendations are summed up.

1. Factors Favourable and Unfavourable

The small size of holdings, the high demographic pressure on land and the prevalent mass of rural proletariat, the huge number of bovine population and their small size, innumerable tenurial patterns and insecurity of tenancy, subsistence cultivation without sufficient economic outlook, methods of cropping and lack of specialisation, frequent failures of crops due to vagaries of climate and rainfall, the illiteracy and poverty of the peasantry—these are some of the chief factors that set the limits, (though not insurmountable), within which mechanisation has to make headway in Indian agriculture. At the other end, the low productivity of agricultural land, existence of vast tracts in different parts of the country lying waste, fallow or unreclaimed which have to be soon effectively brought under the plough, favour the adoption of machinery. The delicate food situation in the country, the colossal flight of people from the areas affected by partition such as East Punjab create the urgent need of application of mechanical power at least for some time to come.

Statistics concerning the size of holdings, the number of bovine population, the number of agricultural labourers and the extent of utilisation of hydro-electric resources in some countries are given as follows:—

I. Average size of holding:	U.S.A. ...145 acres	Denmark ... 40 "	Sweden ... 25 "	Germany:...21.5 acres England ... 20 " India ... 5 "
II. Density of cattle per 100 acres of area shown:	India 67;	Egypt 25;	China 15;	Japan 6
III. Proportion of* utilisation of hydro-electric power to total available estimated resources.	Switzerland...about $\frac{3}{4}$	Germany ... over $\frac{1}{2}$	U.S,A. ... about $\frac{1}{8}$	France...about $\frac{1}{8}$ Japan... " $\frac{1}{8}$ India ... less than $\frac{1}{10}$

Attempts for Introduction of Machinery and the Government Policy

In spite of the radical changes that are taking place in the working methods in agriculture in considerable part of the world during the last 30 or 40 years, the Indian peasant appears to remain much the same unchanged in sticking to his wooden plough, sickle and other simple and time-honoured implements for which we should not blame him entirely. It is true that certain types of machinery and improved implements like sugar-cane crushers, water-lifts and pumping machinery fodder cutters, iron ploughs etc. are found in common use with the big landlords. However, it must be admitted that still the people at large are not become mechanically-minded.

Mechanical traction is experimented by a handful of big land owners, zamindars, or private bodies in parts of Gujarat, Karnatak, the C.P., Upper Sind, north Bihar and Orissa. But it may be mentioned that broadly speaking upto the outbreak of World War II, there was no planned or definite effort by the private bodies or individuals or on the part of the provincial and central governments to encourage the use of machinery except the little departmental success achieved by the Departments of Agriculture in some localities. The latest movement towards large scale use of agricultural machinery is largely the bye-product of the "Grow More Food" Campaign. It has received further impetus from the problems cropped up recently after the war and the Radcliffe-award concerning rehabilitation of the ex-service men and the refugees.

Mechanisation of agriculture is taking place to an appreciable extent in various parts of the country in recent months. 300 tractors were received from abroad and distributed during January-April 1948 to the Provinces and States; 200 more tractors are expected arrival from the U.S.A. and the U.K. Besides, the Government of India have obtained after the war about 300 tractors from the U.S. Surplus Stores, a good number of them having been disbursed to the scarcity provinces and states. A stimulated demand from the provinces and the Unions of States for the agricultural machinery is noticeable as a

* The potentialities of India's hydro-power resources rank only next to Canada and the U. S. A. but only 4 million kilowatts have been exploited so far out of the estimated total of 27 m. kilowatts.

Note: Some of the statistics given above are taken from the "Indian Rural Problem", as quoted from different sources therein.

N.B.—The average size of holdings in various Provinces in India ranges between 2 to 11·7 acres according to the available data in 1931.

result of the successful operation of schemes of reclamation of waste lands carried on by tractors supplied by the Central Tractor Organisation of the Ministry of Food and Agriculture. The Madhya Bharat Union has asked for three units of 15 tractors each, the C. P. and Berar for six units while the Government of U. P. propose to carry out the schemes in Ganga Khadar, Naini Tal Tarai and Jhansi on which 45 tractors are engaged in work. However, there is nothing surprising in these demands when we consider that India purchases less than a thousand tractors a year, while every individual factory in America annually produces perhaps more than a million. Intensive research work on the design and more economic manufacture of improved agricultural implements and investigation into the possibility of more effective use of mechanical appliances in increasing food production and saving time and labour costs is proposed to be undertaken by some of the workshops and manufacturers in the Bombay Province. The Prime Minister of India, recently launching the first Indian built Diesel tractor at the Sion factory (Bombay)—belonging to the manufacturers of tractor-drawn heavy implements for the Government's "Grow More Food" drive—commended that "the development of tractor ploughing is very important for our country, and every such development should be encouraged," though the occasion may only go to lay down rather "the beginnings of mechanical agriculture."

The points that are to be borne in mind for designing suitable machinery for conditions of Indian agriculture may be outlined as follows: Since ploughing in India has largely to be done in dry summer months of April and May in hard-set soils, the two-plough tractor must have a little more horse power say minimum 30 H. P. fitted with electric lights so that work may be done in the cooler hours of night avoiding the scorching heat of the midday sun. The next question is concerning fuel; it must be as cheap as possible and in this respect diesel-tractors are preferred to machines run by petrol. Besides, it must be the farmer's over-all power plant doing his ploughing, seeding, lifting or pumping water and also working as an automobile with rubber wheels, with field speeds of 3 and 4 miles per hour and road speed of 10 to 15 miles per hour, so that the machine can be used for transporting manure to the fields, and marketing the farm produce to the nearby markets. Further, the size of machinery, provisions for repair, housing and above all, credit for purchase or hiring of the machines are equally important aspects.

Mechanisation vs. the Grow More Food Programme and Reclamation of Waste Lands

On the recommendation of the Food Grains Policy Committee, extensive experiments are being carried on for reclamation of culturable wasteland particularly in the provinces of the U.P., the C.P., the Punjab, Bombay and Madras. A brief account of the progress of work in some of the provinces is given below. The first experiment was carried on in the U. P. where over 45,000 acres of waste-land were reclaimed in the last season with the help of 200 tractors which the Government obtained from the U. S. Army equipment, the area reclaimed during December

1. See my article on "Land Colonisation" The Silver Jubilee Memorial Volume of the School of Economics and Sociology (Econ-vol), 1947, pp. 116-127.

and May 1947 being about 26,000 acres. In the C. P. about 150,000 acres of land are lying waste in Sagour district infested with 'Kans' which takes deep root in the soil and cannot be removed by the ordinary plough. The Provincial Government have planned to clear this area of the pest 100,000 acres at least and bring it under wheat cultivation. Thirty two tractors have been working in the village of Khurai and ploughed nearly 7,000 acres of 'Kans' ridden tract during March and June 1948 when the outbreak of the monsoon withheld their operation. Tractor cultivation is already begun in Hoshangabad district and it is hoped to start work in the other two centres of Nagpur and Daryapur (Berar) about middle of April. The Government propose to secure more units of tractors and reclaim the whole tract by stages. The Minister for Agriculture of the Central Government after touring the areas in the middle of the year promised to put 6 more units of 15 tractors each under the disposal of Provincial Government to bring in more land under wheat cultivation. The owners of some of these lands have enthusiastically welcomed the scheme and co-operated in the land consolidation process. Bunding is being done with the help of bull-dozers. Further, it is reported that large portions of land have to be kept fallow owing to shortage and high prices of bullocks in the province. With a view to help cultivators to meet this situation and to intensify the 'grow more food' drive Government have decided to open a few tractor stations for making tractors available for hire for ploughing fields at Rs. 20 per acre. "Takkavi" loans may be also disbursed to meet ploughing charges.

A start with mechanical agriculture was also made in the E. Punjab. According to the scheme of tractor cultivation sponsored by the Government of India, sites have been selected in the Karnal and Ferozpore districts for major operation and also in the districts of Hissar, Rohtak and Ludhiana for stationing the tractors. Some land was already ploughed and cultivated in Jullunder and Ambala. It appears that the Ministry of Agriculture is encouraging schemes for large scale mechanical cultivation in the E. Punjab for rehabilitation of refugees from the W. Punjab who do not possess necessary implements for cultivation of land lying in Ferozpur and Karnal districts.

In connection with increase of food crops in Madras Province, nearly 1,600 acres of land were levelled and ploughed with the aid of tractors and heavy iron ploughs. The policy of the Bombay Government with regard to mechanical traction is that it should be confined to deep ploughing for purposes of bringing wasteland under cultivation and for the eradication of weeds such as 'hariali.' Tractors which are not required for deep ploughing are to be disposed of to private parties, preference being given to the Taluka Development Associations and co-operative organisations. Schemes for development of wastelands are given effect to at places like Indoor, Hillur and Rampur in Kanara district and blocks allotted for settlers, largely refugees. Protection and improvement of 'khar' lands and reclamation of tidal lands by construction and maintenance of embankments in Bombay Province, and reclamation and development of waste and grass lands in the centrally administered provinces of Delhi and Ajmer-Merwara were also mooted out.

In this connection mention may be made about the Central Land Reclamation Organisation as proposed by the Food Grains Policy Committee and the six-year plan of reclamation as worked out by the Food and Agriculture Ministry, Delhi. The Food Grains Policy Committee in its final report recommend for establishment of a Central Board of Agricultural planning, setting up of provincial Boards of Agriculture and an autonomous Central Land Reclamation Organisation with a capital of Rs. 50 crores, with a view to bridge the food deficit of about 3 million tons of food grains by reclamation and cultivation of cultivable waste lands of all types. The functions of the Central Organisation for reclamation are as follows: The Organisation's work will ordinarily be restricted to reclaiming land and making it available for the Provincial Boards of Agriculture for settlement and disposal. The actual cost incurred for each project will be recovered from the province or state in whose area the project lies in twenty equal instalments. The Committee are of the view that no area less than 10,000 acres should be entertained by the Central Organisation for reclamation and the reclaimed lands should be settled in such a way that the minimum size of each block of land, after parcelling, should not be less than 200 acres in size. The functions of the Provincial Boards of Agriculture are: (a) to recommend to the Central Board on suitability and availability of land for reclamation in the Province (b) to assist the Central Organisation in the work of reclamation, (c) to advise the Provincial Governments about the agency for subsequent cultivation of reclaimed land and (d) to review and report to the Central Board regarding the progress of provincial food production plans.

The Ministry of Food and Agriculture of the Government of India have drawn up a six year plan of land reclamation. With the help of the number of tractors now in hand and by importing 1,000 tractors during the next three and half years nearly 6 million acres of cultivable waste-lands out of the total 88 million acres in the country, can be brought under cultivation. According to estimates, this may add only about 2 million tons of food grains annually to India's food resources. But still, there is a shortage of 1 million tons to the target of 3 million tons set up by the Food Grains Policy Committee. In order to reach this figure, approximately 10 million acres of cultivable waste-land will have to be reclaimed. The following is a rough estimate of the areas in different parts of the country.*

REGION	AREA	REGION	AREA
East Punjab	500,000 acres	Malwa Union	1 million acres
The U. P.	1 million acres	Madras Agency tracts	1 million ,,
Berar	200,000 ,,	Vindhya Union	500,000 ,,
Assam	4 million ,,		
Orissa	1 million ,,		
		Total for the two cols.	10,200,000 acres

* Cf. 'Hindustan Times' dated 13-8-48 and 'Times of India' 22-5-48.

It may be noted that, although the contribution to food production made by cultivation of these lands may fall short of the estimates at least in the first three years, however, the benefits obtainable in the long run are unquestionably immense which amply justify the speedy and effective operation of all such schemes.

Conclusion

In short, the following main inferences clearly emerge out of the above discussion. Agriculture is increasingly mechanised and motorised for reasons connected with labour, technical progress and rational use of agricultural resources. Mechanisation on the whole, in countries where it has progressed, is considered as a boon to society in as much as it has secured higher wages to the labourer, larger yields and better quality products from the farm, and more income to the farmer to enable him to live and lead a happy farm life with expanded scope for the development of his intellectual and aesthetic faculties. It is found useful in correcting and supplementing the niggardly ways of nature as manifested in the qualities of climate, soil and other conditions. In India, although mechanised agriculture on factory farms as in the U.S.S.R. or in the U.S.A. is inconceivable in the foreseeable future, yet there exists no doubt a wide scope for improvement of the implements that are commonly used as well as to encourage the manufacture of improved implements and other machinery suited to the requirements of Indian agriculture. As the Industrial Commission have pointed out improvement in agriculture will necessarily imply a growing mechanisation of its processes and may be expected to bring into existence large manufactured establishments to produce agricultural tools and machinery.[1] The need of machinery for reclamation and cultivation of waste-lands is indispensable. By gradually developing the systems of co-operative and joint farming, it is possible to benefit from the use of machines owned or hired from the government stations. There is ample work in this direction for the co-ordinated efforts of agricultural co-operatives, the department of Agriculture and the department of Planning and Development. The State, besides doing loud propaganda, can offer additional encouragement by way of subsidies and concessions regarding manufacture and transport charges on agricultural machinery and generally on all improved implements and provision of technical education at all levels.

1 Cf. Report of the Industrial Commission, p. 22.

GROW MORE FOOD
WITH
P.M.W.'S POTASH & CHEMICAL
FERTILISERS
For use with all Crops, particularly with Sugar-Cane, Tobacco, Paddy, Cocoanuts, Wheat, Potatoes & other Root Crops.
THE PIONEER MAGNESIA WORKS, LTD.
'Phone: 22843 (Established 1918) Telegram: "MAGNESIA"
Regd. Head Office:—Chartered Bank Bldgs., 3rd Floor, Fort, BOMBAY, 1.

Prospectus of The Rural Workers' Training Institu

ADARSH SEVA SANGHA, POHRI, MADHYA BHARAT

1949-50

Object

THE object of the "Rural Workers' Training Course" is to give thoro ugh grounding to rural workers, both men and women, in theory and practice of rural development. The training while embracing all-round development of village life, will particularly, initiate the trainees to the methods of Planning on the basis of Economic Democracy, Social Security and Village Administration to meet the five essential requirements of the villagers—Food, Clothing, Housing, Health and Education, including Means of Communication.

Period of Training

The period of training will be of one year from the 15th of April, 1949 to the 14th of April, 1950.

Qualifications for Admission

The candidate wishing to join the 'Training Course' should have the following qualifications :-

1 He should have faith in the establishment of a new World Order based on the principles of Economic Democracy.

2 He should be prepared to live and practise the three principles of Economic Democracy; viz., Service Motive, Planned Life and Full Employment in his every day life.

3 He should be inspired with patriotic love and zeal for the service of the villages and be imbued with a desire to improve them at personal sacrifice.

4 He should have a good knowledge of Hindi and English to be able to follow lectures in both the languages. His educational equipment or general ability should be that of a graduate standard.

5 He should be a non-smok r.

6 Wearing of Khadi is essential.

7 He should strictly observe th discipline and the daily life of th Institute.

8 He should be of good physiqu capable of putting in hard manu labour. He should instinctive be a lover of hard life and be ab to withstand the privations of li in villages.

Course of Training

A Theoretical:-

(a) The following are the subjects f Study:-

1 Theory and Principles of Rur Reconstruction.

2 Principles of Planning for establishment of Economic Dem cracy and Social Security.

3 Rural Survey.

4 Village Administration and t Working of Panchayats.

5 Organisation and Working of Village Centre.

6 Scientific and Advanced Agricu ture with particular reference regional Food Self-sufficiency.

7 Live-stock Improvement.

8 Development of Cottage Indu tries.

9 Training in Cooperative Pri ciples and Methods.

10 Rural Education.

11 Rural Health and Sanitation.

12 Nutrition and Balanced Diet.

13 Social Aspect of Village Reco struction.

14 Importance of Moral and Re gious Background.

15 Rural Housing.

16 House-keeping and Home Deco tion.

e, the country at the present is faced with acute food-shortage, the students will specially be qualified to potential of lands under cultivation and ensure regional self-sufficiency in food.

RURAL INDIA

Vol. XII, No. 4] APRIL 1949 [Whole No. 122

"Salvation of India lies in Cottages"
—*Mahatma Gandhi.*

DO OR DIE ON FOOD FRONT

WHILE addressing the Federation of Indian Chamber of Commerce, Pandit Jawaharlal Nehru had to admit the failure of the Government to tackle the difficult food situation and advised the Nation to solve it within two years in the spirit of the crusaders of old to do or die. The Prime Minister's assertion to produce necessary food or perish in the attempt of producing it in the course of the next two years is a bold statement, coming as it does from the head of the Government. It obviously indicates a stage of desperation that has reached in the country in the handling of the food situation. Stressing the emergency of the situation the Prime Minister is reported to have said:

"The food situation was the basic problem facing the country. It was one of the issues on which it could be rightly said, the Government had failed in dealing with the situation. Perhaps the ease with which they could get food-stuffs from abroad had prevented them from facing the problem appropriately. But, we should think in terms of not getting any food at all from outside after a stated period of one or two years or less. Let us make up our mind to live on the food we produce or die in the attempt. I am quite convinced that essentially and basically the food problem is not a difficult problem. Somehow or other we have made it difficult."

The Revised Food Policy

It is gratifying to note that the Government have revised their old food policy and have decided not to import food grains from foreign countries after 1951. Announcing this decision in the Union Parliament, the Food and Agriculture Minister, Shri Jairamdas Doulatram, said, "Except in the case of grave calamity such as widespread failure of crops or for building up a Central reserve, the Government will not import any food grains from abroad after 1951."

The Government deserve our congratulations for this bold decision. It is to be hoped that adequate measures will be taken to implement it and the Provincial and States Governments will not only tighten up their procurement arrangements which are essential to carry out their food control policy, but will also take effective steps commensurate with the magnitude of their object to produce enough to feed the population under their charge before foreign imports are stopped. If necessary, we may even propose the overhauling of the food production departments to ensure vigorous working of the plans and policies laid down to achieve the object. Let all concerned realise the gravity and seriousness of the problem and galvanize all resources in men, money and materials, to put in the utmost effort

for increased production to meet the deficit of eight to ten million tons of food grains in the country, if we really do not wish to die in the attempt by stoppage of foreign imports.

In view of their present revised policy the Government have decided among other things to launch a programme of intensive cultivation of that part of food acreage which has perennial or assured supply of water giving subsidized aid in the shape of improved seeds, organic manure, compost and fertilizers; concentrate on the reclamation of about eight lakh acres of waste land with the help of tractors; sink tube-wells; import special qualities of fertilizers for use in irrigated rice areas; divert a part of the acreage from surplus crops to cereals; and encourage the development and use of such high yielding non-cereal food crops as bananas, papaya, sweet potatoes and tapioca.

Implementation Of The Programme

For the implementation of the above programme the Government have decided to set up a small development board at the Centre and request the Provinces and States to set up parallel development boards in their respective areas. To facilitate the movement of iron and steel, cement and coal, and to remove all other transport difficulties, it has been decided to have a special liason officer who would keep the link between the Centre and the Provinces and States in these matters. Monthly and six monthly meetings of the officers of the Centre and of the Provinces and States to review the progress of the plans have also been decided upon for the speedy and effective working of the programme. To secure the cooperation of the agriculturists, it is intended to organise farmers' Unions under the leadership of progressive cultivators in each area.

Placing before the Parliament the revised food policy of the Government, Shri Jairamdas Doulatram emphasised the urgency of tackling the food problem on war-level and said :

"All of us, the Government, no less than the House and the public, feel that we must be independent of food imports by the earliest possible date. A reasonably early date has now been fixed. It is a challenge to all of us. But the challenge can only be met if the food front is looked upon really as a war front; and if the same sense of urgency and emergency which inspires a successful war-effort also inspires our plans of food production."

The Food Minister further said, "It would need the greatest effort by all of us both the Government and the people. The maximum co-operation between the Central and Provincial and States Governments on the one hand and the nation's producers in the fields on the other, will alone enable the country to reach the goal we have placed before ourselves. I feel confident that that cooperation will be available."

The immensity of the problem can hardly be over-emphasised. Planned and concerted action both by the Government and the public alone can relieve the threatening food situation. Setting of an object is no doubt the first essential to give direction and force to all effort; but it is the implementation of it which really matters. Numerous plans have been made in the past, but many of them have not even seen the light of the day. 'The taste of pudding lies in its eating'. While addressing the students of the Indian Agriculture Research Institute, New Delhi, Pandit Jawaharlal Nehru said:

"We have to judge and weigh the results of our day-to-day undertakings as we cannot afford to wait for long and watch the results of our progress. We are dependent upon other countries for our resources which should not be allowed to continue. The decision to make India self-sufficient in the matter of food grains within two years will have no meaning unless it is implemented with the requisite determination."

The Prime Minister exclaimed, "The acute shortage of food grains is a challenge to our intellect, resourcefulness and very existence ; we have to realize the urgency of the problem and treat it on a war-time emergency basis." He added, "If unfortunately war breaks out in any part of the world, what will be the state of affairs in our country which depends on other countries for food ?"

Referring to the Government plans of reclamation of waste lands and development of river valleys, Pandit Nehru stressed the importance of increasing the productivity of the soil already under cultivation. If the productivity of the present cultivated land could be increased only by 10%, it would considerably ease the food situation, he said. It is here, we entirely agree with Pandit Nehru and maintain on the basis of the experiments carried out at Pohri Village Centres that there is immense scope for development of the areas already under cultivation. The Government plans referred to above, betray a serious defect that while plans are made to bring new lands under cultivation, no serious thought is given and adequate measures taken to improve the productivity of those that are already under cultivation. The Government propose to concentrate their efforts in selected areas where water facilities are already available. But what about the dry areas which are more than 75% of the total area under cultivation ? This is a lacuna and a big lacuna in Government plans if we may say so.

The Task Before A. I. Food Production Conference

The All-India Food Production Conference (Pohri, Madhya Bharat) is being held at the most opportune moment when the Government have also announced their revised food policy. The Conference has to take a comprehensive view of the whole situation and devise means and methods in conformity with the resources that are available at our command without much depending upon foreign aid in the form of tractors and fertilizers.

The call of Pandit Nehru that we must either produce or perish is a call worthy of the warrior in him prepared to take risks at all stages. Before India attained Independence, the nation had to resolve to 'Do or Die', which resulted in the memorable movement of 1942. If we want to be independent of foreign imports in respect of food, we must conform to the same old resolution of 'Do or Die' and strive to attain our goal in the specified period. Instead of stopping all imports abruptly after 1951, it may well be counselled to stop half the imports in 1951 and complete the process in 1952.

We hope, the Pohri Conference will give the right lead and direction to the nation to face the grave food problem and be a landmark in the campaign for increasing food production.

THINK BEFORE YOU ACT

By: J. C. Kumarappa

WITH the advent of Swaraj all types of people in India are anxious to mould our surroundings in a way that will indicate advance in the various walks of life. With the great desire to become rich quickly, we are inclined to imitate the ways of the United States of America, forgetting that the conditions in America are so vastly different from those prevailing in our country. If the Americans have set up a pattern of life and have gone about conditioning nature to fit into this pattern, it does not follow that that same pattern and the same methods will apply to our country. There is a great deal of effort made from various quarters to import all things American. This tendency may spell ruin to our country, especially in connection with the efforts made to increase production through agriculture.

The conditions of land and land management in America reflect a set of circumstances which do not prevail in our country. The United States has barely 6% of the world's population while it contains about one-fifth of the cropland of the world. This indicates that America has enough land to be wasteful in their agricultural methods. Their greed to produce more does not take into consideration the loss in fertility of the soil. As soon as land shows any decrease in fertility, they can easily shift on to more productive land. Therefore they are still at the stage where pioneering conditions prevail. Under such circumstances the recuperative power of the land does not enter so heavily into the equation. They can afford to ignore land as an organism. Under such circumstances they have taken to mechanization. Of course, they can produce a great deal with mechanical power when it is calculated on per capita basis.

In India, on the other hand, our land is considerably limited. It has to feed nearly one-fifth of the world in population. Hence we cannot afford to be wasteful in our methods. The recuperative power of land becomes a very important factor in our calculations. When we cultivate a piece of land we are taking certain elements out of it and those elements go to innervate us. The land recuperates itself through various means within a certain time. We have to allow that time as well as rotate the crops grown so as to fit into this cycle. This is a highly technical proposition, as this recuperation conditions the pace of our production from land. If we produce larger crops by more intensive cultivation we shall be reaching the stage of exhaustion sooner after which the land will become fit only for jungle growth or will remain a desert. Hence it will be necessary for us to draw on our resources with considerable thought.

We may say, in some respects, America is in the position of a rich man's son who draws on his capital in addition to his income for his current requirements, while India is like a self-made person who is to equate his expenditure with his income. Therefore, the rate of production in India has to be well-balanced with the possibilities of the soil conditions. In America they are constantly converting cultivable land into grass and forests with the depleting

fertility and drawing on better lands by reclamation. Lands that have been dislodged are open to the menace of erosion which washes away the cultivable soil. Because of their constantly drawing on virgin soil it becomes increasingly important to use tractors. While they use tractors they also have access to the necessary fuel in their land. If we produce food on the basis of mechanization while the needed fuel for the motive power is not available in India, we shall be in a very precarious condition. Our bullocks would have died out and at a time when fuel—crude oil and kerosene—is not available we shall have to die like flies, as bullocks for the needed power, cannot be grown overnight.

Our methods have not been suited to the conditions of our country. Our agricultural practices are largely conditioned by the vagaries of the monsoon. In attempting to control this the authorities have tried in some parts schemes of irrigation based on power. Where electricity is available cheaply electric pumps are used for irrigation. The effect of this has been, that we have been drawing on a very small fraction of the water that is showered on the land during the monsoon, estimated at about 6%, while the balance runs waste into the sea and even out of this 6% the benefit is for the rich. Those who can afford to instal electric pumps draw whatever water is available for their own fields. The poorer sections lose even that which they have, as their own wells and tanks, to which alone they have recourse, dry up as the pumps work. With the advent of the pump the sub-soil water level sinks too deep for the wells and tanks to function. Not only this, but even old trees die out as the sub-soil level sinks below the level of their roots. These dried up trees are cut down and the land is exposed to erosion.

The drawing on sub-soil water in this manner may not affect the land in cases like the Gangetic plain and the river deltas which are sometimes even water-logged, but in most parts of the country where the water table is already low it will have a very adverse effect. Conditions in our land, therefore, indicate that what is needed is not the more intensive exploitation of the sub-soil water, but the conservation of the major part of the water that runs waste into the sea. In other words, more than electric pump, we require small dams put across streams, rivulets and rivers to hold back some of nature's gift in store. Here is one instance where the much vaunted mechanical aid in the form of electric pump foreshadows ruin and desolation to the countryside.

These instances only show the need for a comprehensive well-thought-out plan, unrelated to the greed of vested interests, bearing closely on the natural conditions that prevail in our country, and which will be within the pattern of life indicated by nature for a tropical country like India dependent on the monsoon. At the present, the schemes that have been put out do not give any signs of having taken such a comprehensive view of our needs. So we must warn our farmers from taking a step in the dark with promises which will prove to be short-lived.

FOOD GOING WASTE

By: R. N. Muttoo

THE Government of India spends less than one crore on the Agricultural Department but spends the huge sum of 150 crores a year on importing food grains from abroad. The situation needs hardly any comment beyond mere statement.

Food Conferences are held; a great many learned speeches are delivered; a lot of ink is used up in writing elaborate plans. So far as the man-in-the-street, his dwindling cash and his empty stomach are concerned there appears to be no betterment in the situation inspite of all these conferences, plans, etc. Food prices go on soaring higher and higher. Milk and butter are beyond the reach of the ordinary man and his child. What sort of a nation does our Government expect to rear on such a food situation ?

The Government, when asked, can marshall long series of facts and figures in self-justification. That is hardly the attitude to adopt. The facts and figures help nobody; least of all the hungry poor man in the street and his baby. The point is how has all the continued effort of the government eased his situation ? If it has not, no amount of self-justifying explanations will help him.

It is not my purpose here to inflict another "PLAN" on the weary reader. My purpose is to draw the attention of the reader to a deeper malady which is, in my opinion, the cause of our present day difficulties and worries. The inefficiency of governmental machinery can also be traced to this fundamental cause. I refer to sleeping or "dead" PUBLIC OPINION in the country. To quote the words of our present Congress President; "The fact is that our society has become effete altogether and what is known as public opinion . . . has been for long dormant or even dead." In this article I shall try to rouse this sleeping public opinion, if I can, in the restricted matter of the colossal waste of valuable food which is annually taking place in our country through merely our own ignorance and laziness.

I draw attention to a national waste of food materials, worth several Crores of Rupees every year. We can collect this food, called "*Amrit*" by the ancients, if the government gives the requisite help. To spend 150 Crores on importing food from abroad and yet to show penury in spending money on food-producing departments and agencies appears to me to be inexplicable, unreasonable and a sign of our own backwardness and ignorance.

I have, several times before, in the pages of this magazine and in several other influential dailies, weeklies and monthlies of India, drawn attention to this colossal annual waste. But my words have had little effect.

We do not have to till one single acre of land. We do not need any fertilizers. We do not need any heavy labour. We do not need tractors.

Inspite of this, the food fails to be collected.

We are referring to the Honey Crop of our country.

For generations past, we have been cruelly treating the Honeybee; originally a child of India, but now spread throughout the world. This useful, friendly insect is becoming all but extinct in India owing to our neglect and ill-treat-

ment. Annually, the Forest Departments, give contracts for paltry sums, for the extermination of this useful food-producing insect. The contractors, for a little gain, burn and destroy their nests and thus render them home-less at a time when they need protection and have for that reason collected an abundance of food to last them through the dearth period. Thus deprived of home, eggs, young ones, stored food and part of their working members, the whole colony of these insects perishes in most cases. And what does the contractor get? A little beeswax after which he goes. The honey he obtains he does not value so much. That honey, in any case, is collected in such a faulty manner that it would not be a wholesome food. In some places, particularly in the hills, this insect is reared but, in the same faulty way, the colonies are annually destroyed. That the insect has not completely become extinct is due to no fault of ours—we have done our best.

In other lands, this same insect, has been hailed as the 'best little friend of man'. They have treated the insect well. It has been reared, cultivated, with scientific care. It has multiplied a million fold. In Russia, in U. S. A, in Australia, in New Zealand millions of pounds of honey are produced annually by this little insect as food for man. And all this valuable food is produced without it being necessary to till one extra acre of land or to use up any manure.

Again, these very countries tell us, that this little insect not merely produces honey for them; it also increases the yield from several of their crops. This increase, of 10 to 15% in the produce of field crops, and fruit crops, also comes to us without the cultivation of an extra acre of land. The crop is there. If you place bees in the vicinity, the produce is increased. All that you have to do is to make the services of honeybees available to the plants at the right time and in sufficient number.

At the Punjab Government Agricultural College and Research Institute, Lyallpur, Dr. Khan A. Rahman, Government Entomologist, found as a result of his experiments that the honey bees increased the yield of crops like the mustard by 10 to 15%. India produces about two hundred crores of mustard crop. Thus, if we were to confine ourselves to this one crop alone, we could get 20 to 30 crores of extra much-needed food crop. The nice honey the bees would produce being extra gain.

It is on record, that Russia, after the revolution, when it wanted to produce large quantities of seed for the extension of its own agriculture, utilized, and utilized successfully, the services of honeybees for this purpose. Production of honey was not the aim of Russia. It was, at best, a secondary objective. To produce more seed was the objective and this objective was gained.

Why is it that we, in India, fail to do what others have been able to do? We marshall long list of facts and figures. We talk of lack of manure and fertilizers, lack of steel for agricultural implements, lack of sufficient culturable land—but we have here a source of food supply, going to waste through our ignorance and laziness which does not require either manure or more culturable land.

We hear it asked why can we not produce food in the same spirit and in the same manner in which our government officials of those days produced the requisites for war with resources which

appeared so very inadequate? The reply is simple. We can, if the government takes a similarly serious view of the situation and is prepared to spend money on a scale comparable to that of the "War Effort" which we wish to copy.

If a farmer were to allow even one acre of the wheat crop to go un-harvested in any single season, we will cry shame on his laziness and criminal waste. Yet, as a nation, we allow crores and crores of the honey crop to go to waste every year because we do not arrange for its harvesting. One reason is that the wheat crop is there in a solid, accustomed form and all can see that it is there. The honey crop, though it is "there" in the same manner, awaiting collection and harvesting, is not seen by the average eye. It can be "seen" only by the few who know about it—who have the eyes to see it.

The honey crop is found in the flowers of trees, shrubs, grasses, weeds, crops, etc., and is produced by nature every year. Only the honeybees can collect this crop from the flowers. No other agency can be used for the purpose.

If this honey crop is not collected, it goes to waste through the drying action of the sun and the wind. This sweet fluid in the flowers is produced by nature for no other purpose than that it may serve to attract insects like the honeybee whose services are needed by the flowers. If we do not arrange to have enough bees, the crop is not gathered and goes to waste.

By continually destroying bees' nests we have made their race practically extinct from our country. Besides, by cutting down forests and trees indiscriminately, we have destroyed the nesting and breeding places of these insects. The only way to increase the population of this dying insect is to cultivate it artificially. At present the insect is fighting a losing battle against the onslaught of its many enemies, the chief among whom is greedy, but ignorant, MAN.

Our government has, so far, done little beyond passing resolutions on the subject. The Central Government has the excuse that Agriculture is a transferred subject. The Provincial Governments, with some exceptions, have done hardly anything at all. The Forest Department goes on merrily in its game of destroying this useful insect annually through greedy contractors. Here also we must point out a notable exception. This exception is in the case of the Forest Department, U. P., which, under the enlightened lead of its Chief, Shri M. D. Chaturvedi, I.F.S., has recently started on the right road. The province of U. P. is also fortunate in having at the moment, as Minister of Agriculture, Shri N. A. Sherwani, who is personally interested in bee-keeping. But even this personal interest of the Hon'ble Minister does not carry the industry far. We are practically where we were. Funds appear to be unavailable for the development of bee-keeping on an extensive scale even in the United Province. During the past twelve years, we have done all we could to educate the public and the government on the subject. But the results so far are extremely disappointing as compared to the efforts put in. We have repeatedly drawn attention to the fact that, an industry like bee-keeping requires intensive and sustained effort on the part of Government. Even in a country with an enlightened and prosperous peasantry like that of England, it required well nigh forty years and huge expenditure of funds, before modern bee-keeping was finally established there by the government.

Bee-keeping can bring prosperity to the nation in a variety of ways. Any money spent on the development of this useful industry will be a good investment indeed. To quote the wise words of Girard: "All money thrown out of the window, in encouraging apiculture, will come in again by the door, with heavy interest."

RURAL INDIA

By Biswanath Das

OUR *Puranas*, *Upa-puranas* and *Itihas* speak of an eternal strife between the rule of reason and the rule of force—one represented by Devata and the other by the Rakshasa. In this strife, reason has always prevailed. Our rural economy, therefore, mean and imply a regular life, a course of Sadhana emanating from a passion for simple living and high thinking. Culture and devotion have thus been the *Summum Bonum* of such a life. This necessarily leads to a society based on Satya and Dharma where man devotes himself to duty – very well summarised in the expression 'Kartavya'. A society constituted on 'Kartavya' necessarily leads to self-reliance, culture, strength and endurance freeing herself from exploitation. India was thus a country, according to European travellers and writers of the 16th and 17th centuries, flowing with milk and honey, having had developed an industry, the remanence of which have been even to-day the wonder of the world.

India, like all other States in Asia, is essentially an agricultural country. About 80% of our people live on agriculture and about 85% of our people live in villages. India before the 15th. August, 1947, was a country of 15,81,410 sq. miles with a population of 38.9 crores—density of population being 246 per sq. mile—in which the States formed 24% of the population. Divided India including the States has an area of 12,20,099 sq. miles. This vast country of Bharat Varsha, even after its division, has only 15% of urban population, having the rest 85% in the rural areas. Indian culture and civilisation may therefore properly be styled as rural civilisation-simple living and high thinking as the aim of life. This vast agricultural country according to the 1941 census had 6,55,892 villages of which British India accounted for 4,59,391 and the rest covered by the Indian States. These figures necessarily exclude the independent State of Nepal, Semi-independent State of Bhutan and the foreign possessions of France and Portugal. British administration extending over one and a half centuries directed all attention on the development of towns and cities to further their own ends—exploitation. To-day, therefore, whatever conveniences in matters of education, public health, medical aid, amenities of social and cultural association and all public utility activities—both of State and corporate bodies—have been and still are, are confined mainly to cities and towns. Rural conditions have been the object of coma and neglect and have to be revived.

Revive Villages

A call to revive the villages presupposes the direction that this revival is to be given under the new set-up. Britain, before she became the mistress of this country, knew well that the village organisation was the main source of her strength. The village organisation, her administration, her economy and above all her village community made British and European writers and travellers feel that each one of these miniature republics is a strength in itself. This was the back-bone of social life and united action which, once for all, was smashed by British Statesmen when they, as rulers, became the masters of the land and enunciated the imperial policy that no one could hold land without a direct

must be an easy and convenient method of transport to the market for themselves and their produce. They must plan and plan well after a thorough study of their finances, the demands of the market, the soil, and climate; begin slowly and produce and supply what the market demands.

In the way of crops they choose, I cannot recommend them to try grain and such ordinary commercial crops, except for their own use, and that only while the shortage in food grains lasts. They should build their business on vegetables, fruits, flowers, milk, medicinal herbs, poultry, goats, nursery and the cottage prepared specialities like preserves, jams, pickles, chutneys, fruit juices, ketchup, etc. In some places, one may prepare butter, ghee and cheese. Honey may be a good addition to one's income. Start with the crops that can be produced in the shortest possible time. Take first things like bhajis which are ready in a month; advance to vegetables which require two, three, four and six months to get ready; forward again to crops which require a year like papaiyas, bananas and sugarcane; then to pineapples, figs, grapes, apples and phalsas all requiring about two years for fruiting; and finally tree fruits requiring three to seven years. Sugarcane is not only a very profitable crop to grow, but can also be turned into gur on the farm.

It is always a big advantage for a farm of the kind we are contemplating to build up a personal, retail clientele for its products. A mixed farm of this kind will produce a little of a variety of crops, and is not well placed for supplying a wholesale market. There are very great advantages in supplying retail customers; you obtain a much better price; quality receives its due reward; you can be guided by the taste and the criticism of your customers.

Mixed farming is always to be preferred in our case, to a one or two crop farming. There is no crop and no department of a farm, which is not liable to complete failure or to complete destruction some time or other. Weather is an unreliable factor; diseases appear suddenly and destroy some crop or live-stock wholesale; storms can be ruinous; flood damage is not so very rare; sudden fall in prices of a partienlar commodity has been experienced often; insects occasionally appear out of the blue and ravage whole crops; and many, many other destroyers are to be found in Nature's armoury. Therefore a variety of crops and activities are a good insurance against total loss. There is another reason:—the keeping of animals and the growing of crops on the same farm is a form of symbiosis; the animals feed on crop wastes, weeds and grass, some on insects, and supply the much needed organic manure for the farm. Each benefits and supports the other.

Finally, let us consider the capital needed and the returns. Supposing we purchase the land for 3,000/-, a ten acre plot; we will build a cottage for 2000/- for the family. If we keep two acres for the grazing of our cattle, we will have seven acres available for cultivation. We buy engine, pump and pipes worth 2000/-; we get two bullocks for 800/, two buffaloes for 1200/-; tools and implements will cost 500/-. We will employ four men for farm work costing 1800/- per annum. We will need 1200/- p. a. for the family expenses and 1000/- for manures. At the end of the first year such a farm will be at least self-supporting. Our total investment amounts to 12,500/-. Let us keep 2500/- in hand for the working cost of engine, feed of animals, and miscellaneous expenses. Thus we will keep the capital of the farm at 15,000/-.

What return may we expect from such a farm? An acre of bananas planted in the first year, will bring a gross income of 3000/- in the second twelve months; one acre of papaiyas will bring in 2000/- gross. Milk will bring in 1500/- a year. Two acres of vegetables will bring in during twelve months 1500/-. Thus we total an income of at least 8000/- in the second year, against a running expenditure of 6000/-. The cultivated area will go on growing to reach the full seven acres in four years. When the farm reaches its zenith in the tenth year, the nett income of the young farmer, after allowing himself 1200/- per annum, will be 5000/- p. a. Is this not better than being cooped and driven in a city office on even 250/- p. m.? I will not catalogue the joys and advantages of country life. It is for each individual to prepare his own list.

THE GROW MORE FOOD CAMPAIGN

WHY IT FAILED AND WHAT SHOULD BE DONE

By G. Jogiraju

Asst. Director of Agriculture (Retd.)

THREE main factors are responsible for the failure of the 'Grow More Food' campaign inaugurated during the last war, so far as the lands already under cultivation are concerned. One is that the cultivators in general did not feel the urge or have the enthusiasm to produce more than they were hitherto producing. Dearth and high cost of labour, manures, and materials required for implements etc., was another. Want of adequate knowledge as to how substantial increases in yields could be obtained without undue exertion or large additional investment was the third.

The first of the three factors mentioned above is the most important having been more responsible for the failure of the campaign than the other two. The Government having controlled the prices of food grains, the margin of profit to the cultivator was much reduced on account of the wages of labour having increased three or four fold, as also the cost of maintenance of cattle, manures and other agricultural requisites. Cultivators of large holdings, who were above want, and to whom the only incentive for additional effort at increased production was a chance for making more money, began to agitate against the control of prices and demand higher and higher rates to which the Government haltingly responded. Even at the somewhat increased rates, the margin of profit to the cultivator was not as much as by sale in the black market which by then was firmly established, on account of great scarcity of food grains aggravated by insufficient and partial control and rationing. So long as there was scope for blackmarketing, and so long as there was hope of a further increase of prices by the Government, there was no inducement to the cultivator to adopt the

engagement from the Crown. Thus in Khasmahal (Raiyatwari) land, engagement was directly with the Crown while in the Zamindaries temporarily or permanently settled, such an engagement was with the Zamindar – the Crown agent. By a stroke of pen, the British conqueror smashed a village life and organization that stood the test of times. Under the British rule the ownership of the village lands by the village community had thus to be given up and with it its unity, organisation and responsibilities. With this, the village community lost its joint interest, joint action and also the direct engagement with the ruling authority as a specific unit in paying an annual tax (as different from the rent which he pays to-day) for the land owned by itself as a community. This village organisation was buried deep down by the British Statesmen and to-day, in India, the village is a phial without its scence. What then was this organisation?

Our Village Organisation

The village republic had its corporate existence when, in ancient India, the village community was the owner and proprietor of all lands in the village. This ownership enjoined on it the responsibility of maintaining the cart tracts, burial grounds, grazing land, village forests and village lopes. Governors and Ministers at present, crying for tree plantation, was thus unnecessary, for the villager knew that the prosperity of the village lay in their hands. This relieves the State from a responsibility that is hard and expensive to maintain otherwise. The village had its own services to attend and these were organised on a basis which were efficient, thorough and useful. These divide themselves into three classes (a) Law and order, (b) Economy and Culture, (c) Public Health. The first in the list is the village punch (Panchayat) and the village Dandasi (the village watcher). The punch is the village court and the up-keep of the village machinery. Every service-holder was remunerated with a plot of the village land. Thus the village Dandasi watched the village during the night with his lathi and blade and during the day the village crop. The Gopal (the cow herd boy) herded the cows and the sheep and he was the veterinary doctor of the village. The vaidya-physician, the school master, the carpenter, the smith, the barber, the watchman, the potter etc., was each with his jagir which was intended to keep him in his traditional service of the village. Individual service was being remunerated making him devoted whole heartedly to his profession and thus reach a high degree of specialisation in the art. A healthy competition among themselves either in their caste guild or a public approbation fanned the flare of his desire for specialisation. Mere cry of reviving the village is least helpful unless what was done by the Britisher is undone by the new set-up. Any attempt in any other direction is bound to lead to a costly failure. Production, proper distribution, against corruption and a thousand other State activities could easily be controlled and carried out once village is organised as a unit with its autonomy. The villager may err in the first instance. Wisdom has hardly dawned on any who has never erred.

FARMING AND PROSPERITY

By Jabir A. Ali

THE decline and deterioration of our agriculture and our village life is due in a very large measure to the migration of the smarter and more energetic young men from their homes to cities and towns in search of employment in factories, mills and business offices. The educated young men from towns have not filled the vacant gaps left in the villages. The result is disastrous both directly and indirectly.

The abler young men having left the villages, it is only natural that quality of cultivation should deteriorate, for judgment, observation and energy are the fundamental requirements of agriculture. Village life has suffered just as badly, for who is left to give new ideas, to adjust usage and ways of life in accordance with the changing times? Who has the energy to take the lead in matters affecting the social and economic betterment of the inhabitants? In cases of difficulties in cultivation, or crop pests and diseases, what voice can now reach the authorities concerned, and who will do the shouting to attract attention or bring help?

Few of our educated young men are willing to put their hands to the plough, and still fewer to settle down in villages and be more or less completely cut off from city life. It is a vicious circle:- the villages must be more attractive to induce these men to go and settle there, and the villages will become more attractive only if the educated young men will settle there.

Where can we break this vicious circle? The young men must first settle down on the outskirts of cities and towns, from where they can occasionally run into town to meet friends, visit places of amusement, or contact the people they have been accustomed to meet. On the outskirts of towns, young educated men will find immense scope for initiative, ingenuity, energy, and for the production of quality goods. City markets and city customers pay handsomely for quality.

It is a sad sight indeed to see our educated young men trudging from office to office in search either of jobs or of influence to secure jobs. No search is so depressing or demoralising. Yet what should they do? They have learnt to despise manual labour and to look up to a desk as the one desirable goal, and the only one in keeping with being educated.

From the point of rupees, annas, and pies, they may be raising their ambitions to a hundred rupees per month salary, and at the end of their lives looking forward to reach the coveted 250/- or 300/- mark. All this may be accompanied by the patronising, the whims, tantrums, and the unjust and uncalled for taunts of the superior. What a life! and what a goal!

If the young man is a gradnate, he could not have cost his parents less than 10,000/- to 12,000/- during his school and college life. Can they spare an equal sum in starting him on his life's career?

I invite young men with energy, health, independence, a love of nature and of adventure to leave the beaten path, to move ten, twenty and in some cases even fifty miles from the city, acquire ten acres of land at 250/- to 300/- per acre. They must make sure that the land they buy or lease, has an abundant supply of water, and that the land is cultivable. There

honest but more difficult course of increasing production and thereby making money, which was their [illegible]. Cultivators of moderate [illegible] managed them [illegible] labour could not [illegible] on the labour and [illegible] for increased [illegible] they sure of [illegible] resorting [illegible] vators of very [illegible] ing the off-times, [illegible] working as labourers than by any extra effort to produce more from their uneconomic holdings, their earnings having enabled them to buy any deficit of food grains even in the black market. The tenant cultivators had little interest in improving the land and thereby producing more as the owners would undeservingly claim their half share or demand more rent next year. A good number of landless agricultural labourers emigrated to towns and war camps with the result that the rest of them still remaining in the villages could find full employment, and dictate their own terms to the cultivators and demand much higher wages than before for less efficient work for shorter periods thereby earning enough to get on even by purchasing their requirements in the black market. Neither the cultivators of the different sizes of holdings nor the labourers, had thus felt any necessity or urge to contribute to an increase in production. On the other hand they, in a way, co-operated in sustaining the black market, which was not unnatural under the conditions prevailing.

The second factor which prevented even cultivators who realised their duty to the country or were ambitious to make money by increasing production was that they were to a certain extent handicapped by the dearth of manures, cattle feed and materials for implements and [illegible]. The arrangements made by the [illegible] towards the procurement and distribution of these were inadequate or ineffective owing to the delays which occurred in the supplies, and to some extent by corruption which crept into the agencies entrusted with the work. Dearth of labour even at the high wages which [illegible] and its inefficiency also prevented operations being done in time or thoroughly.

Engrossed in the newly imposed duty of distributing manures, implements, loans and free gifts, the staff of the Agricultural Department had to neglect (in the Madras Presidency at any rate) their legitimate duties, viz., propaganda about and demonstration of suitable improved methods, which could bring about some increase in production, at a time when their advice and guidance were most needed.

It is no wonder therefore that, owing to the three factors referred to above acting together, there has been no tangible increase in production in spite of all the appeals and efforts of the Government and public-workers from afar. Nor does it seem possible to achieve the object except by resort to an intensive campaign by which the problem is tackled from the lowest unit of production—the individual holding—upwards, the organisation of such a campaign being done with the village as the unit of organisation, through a panchayat or committee working on a definite plan inaugurated, directed and controlled by the Government with the help of an efficient expert staff. Through this panchayat, the cultivators individually and collectively have to be

impressed their moral and social obligations to the rest of the rural and urban population with which their own welfare is intertwined. They should be made to understand by intensive propaganda that unless they exert more and produce more food and other essential materials from their land and offer them at reasonable prices there will be a revolution by those who have no land to cultivate, on account of which producers may be deprived from enjoying what they produce, or even of their land itself or the Government may themselves have to take some steps amounting to the same, in order to prevent such a revolution. They have also to be impressed that the loss of income which arises from a reduction of prices has to be made good by producing greater quantities, and that if the prices of food and other essential products are reduced, the prices of other necessities of life will also automatically go down and the economic condition of the country will once more come to normal, much to the happiness of all.

To enable definite results to be obtained, each village panchayat should be made to fix targets of production for each holding based on its present conditions and improvements that could be easily effected, as also a target for the village as a whole and to work strenuously to attain the same in as short a time as possible, in cooperation with the individual cultivators and the staff of the Agricultural Department. The Government should also do their best to help the panchayat and the cultivators by promptly attending to their other needs such as concentrated manures, materials for implements, provision or improvement of irrigation sources, and means of lifting water if necessary, control of pests and diseases, provision of storage accommodation etc.

Each village has to multiply and produce its own stock of improved strains of seed suitable for its lands. Intensive efforts have to be made to bring about the conservation and conversion of all organic waste products of the village into valuable manure in the shape of farmyard manure, urine earth, or compost and also to grow sufficient green leaf to maintain and improve the fertility of the land. All food grains should as far as possible be husked or ground in the village itself and oil seeds pressed in the local ghanies so that the by-products serve as concentrated cattle food or manure. Cotton if produced should be ginned and the seed used as cattle food, while the lint is carded, spun into yarn, and converted into cloth through the local weavers.

The village panchayat or committee while thus organising and promoting production should also arrange, through a local cooperative organisation to collect the surplus of food grains from the producers after allowing for their requirements and for season-conditions and to distribute the same to the non-producers of the village any surplus being handed over to the Taluk co-operative organisation. A deficit if any should be similarly made good through that organisation.

To organise panchayats or committees and make them undertake the work mentioned above efficiently is a very difficult task under the present conditions of many of our villages; but there seems to be no other simpler way of doing the same better. Even at the risk of failure or unsatisfactory results in the beginning, a bold attempt has to be made to organise production and distribution on the above lines, all the resources of the Government in men and money, as well as those

of the Congress and other organisations being concentrated on this vital work, and all political or other differences or considerations being subordinated to this. Every member of the present taluq Congress Committees or every 'effective member' of the future district Congress Committees should be entrusted with the organisation and supervision of the work of one village panchayat or committee. Members of the executive of the other organisations such as the Hindu Mahasabha or the Muslim League may also be similarly entrusted with work in one village each. The agricultural and cooperative departments of the Government should be strengthened so that they may render the necessary technical help and guidance in their respective fields. The assistance of teachers and university students as also lawyers, may also be requisitioned for about a month during the summer vacation during which the organisation of panchayats or committees may be undertaken so that they may begin their work before the next sowing season in June-July.

The organisation of the village panchayat or committee should be a simple democratic affair. The heads of every ten families will elect their leader who will be a member of what may be considered the village assembly, which in turn, will elect one tenth of their number to form their executive body or panchayat. A village or a small group of villages with about 500 families or population of about 2500-3000 will thus have an assembly of 50 members and a panchayat of 5 members. The election also will be a simple affair, the heads of every ten families being brought together informally and made to elect their leader. These leaders will then hold a meeting and elect the panchayat. For the purpose of the election, every ten families in a serial order according to the house lists prepared recently (in consultation with the lists of voters for the next general election) may be grouped together.

The Government should recognise panchayats thus elected, if necessary by legislation, and give them the necessary powers to undertake and perform the duties they are to be entrusted with.

In course of time, these panchayats may also undertake the grouping of small holdings into consolidated economic units to be jointly cultivated by the owners with a pair of common cattle and other equipment, thus economising and increasing production. As experience is gained, other agrarian and economic reforms as well as the rehabilitation of village industries may also be undertaken by the panchayats, so that in due course the village will become a more or less self-sufficient autonomous unit under the administration of its panchayat under the control of the village assembly elected in the manner stated above, without any room for political, religious, communal or other considerations.

HOW TO MAKE INDIA SELF-SUFFICIENT IN FOOD PRODUCTION

By: S. Sen

ACCORDING to the 1941 census, the population of the Indian Dominion including the acceding States is roughly 308 millions. If the population increases at the rate of one per cent per annum, as has been found between the last two censuses, the total population of the Dominion is expected to reach about 340 millions in 1951.

The annual requirement of cereals for this population is 48.5 million tons, based on the estimate of 14 oz. per head per day as reported by the Famine Inquiry Commission, 1946. Against this figure, the present production of cereals is 46.9 million tons. The seed requirements and the loss due to storage account for 4 and 3 million tons respectively. Thus the net shortage is estimated to be roughly 8 million tons. To meet this deficit as well as to provide raw materials for the industry—to mention a few, cereals for the manufacture of starch and glucose; sugarcane, cotton, linseed and groundnut which are in great demand for export and thus provide an effective means of obtaining foreign currency,—the agricultural production of the country has to be increased considerably.

There are two methods of increasing crop production, viz. (1) by the extension of acreage under food crops, and (2) by increasing the crop yields per acre.

The scope for bringing sufficient amount of additional land under cultivation immediately, i. e. in a year or two, is very limited. Besides, taking a long view of things, it will be unwise scientifically and economically to put all the additional land that is available, under food crops, as they may not constitute the most economical way of using all of it or may cause irreparable damage to some of the areas. Consequently, the question of increasing the yield per acre is both of immediate and long-term importance.

The area and total yield figures of crops from year to year in the U. S. A. show that the policy of that Government did not lie in the expansion of area to obtain increase in production. Increase in the yield per acre has been the objective, although the country has still large areas suitable for cultivation. It is very much easier for her to take up the cultivation of new land and its utilization.

In India, so far as recorded figures show, there has not been marked increase in the yield per acre of food crops—rice, wheat, millets—inspite of all improvements introduced by the Departments of Agriculture, while industrial crops which no doubt have received more attention show such an increase. It seems, therefore, that there are special factors which limit the yield of cereals and other crops which do not receive for their increased production the facilities which organised industries can afford. The cereal crops are very largely the concern of the poor peasants who, in most cases, are unable to provide adequately for manures and fertilizers, water and timely cultural operations, the great importance of which is generally overlooked, even to the extent that the peasant is aware of their usefulness.

Timely cultivation, sowing, weeding, irrigation, harvesting, etc.; use of high yielding varieties of crops; labour saving machinery; introduction of suitable legumes in crop rotation; judicious use of fertilizers; adequate water supply; drainage; and in general soil conservation practices as also preventive measures for the control of crop diseases and pests are aids to higher crop production.

Water Supply

Water is the chief factor limiting the production of field crops in arid and semi-arid regions of India. There is much greater scope for the use of river and other inland waters for irrigation purposes. The five irrigation projects viz. Damodar, Kosi, Mahanadi, Narbada-Tapti and Ramapada Sagar are expected to bring about 8 million acres of land under productive cultivation.

The increase of yields due to irrigation is considerable; in the case of rice, the increase is about 50 per cent and that for wheat is 66 per cent. Irrigation coupled with adequate use of manures and fertilizers can raise the productivity of the soil to a much higher level than that indicated above.

Irrigation, however, has not been an unmixed blessing. In the Punjab alone, more than half a million acres have been affected more or less by saline conditions and water logging. The necessity of pre-irrigation and post-irrigation soil surveys is of utmost importance in regions to be controlled by irrigation.

Conservation of Moisture

In areas of deficient rainfall, where irrigation facilities are not available, the means of conserving soil moisture vary according to the soil conditions. In these, dry farming technique has been developed to suit the local conditions. As the air-water relationship of the soil is dependent on the soil structure, appropriate cultural operations are given to improve the moisture status of the soil. The yields obtained by adopting the "Bombay Dry Farming" method showed increases from 50 to 90 per cent over the local method of cultivation.

In many areas where arable crops will not thrive, a more suitable system of land utilization is grassland farming for raising cattle, buffaloes, sheep and other livestock for the development of related industries.

Manures and Fertilizers

The yields of corps can be increased effectively through the use of organic manures and inorganic fertilizers, provided the water supply is not a limiting factor for the normal growth of crops. Our soils are poor in humus content which increases microbial activity, the retentive power and water-holding capacity of the soil and improves soil structure. Under tropical and sub-tropical climatic conditions, the plant residues or the animal remains which contribute to the organic matter of the soil are rapidly oxidised. The use of farmyard manure is very restricted because of its limited supply and waste as fuel, though its value is well known to our cultivators. Under favourable rainfall conditions, green manuring has given good results comparable to those obtained by the application of farmyard manure. The use of artificial fertilizers based on scientific knowledge, where water supply is not a limiting factor, has been very effective in increasing the crop yield. Considering the total area under cultivation, very small quantity of artificial fertilizers is used in this country.

Rotation of Crops

A judicious rotation of crops with

legumes occurring as pulse or green manure or fodder crop helps to maintain the soil fertility better than without legumes. The value of leguminous crops as soil improvers is not unknown to the Indian peasants. In fact they depended no less on legumes and the practice of fallowing for restoring fertility of the soil than on manuring.

In India, climatic conditions are favourable for the growing of more than one crop in a year. With irrigation facilities and proper drainage, it has been possible to take even three crops.

The problem of food production can be tackled effectively by implementing the scientific and technical aids to agriculture as commonly practised in this country. At the same time, the orthodox system followed by the vast majority of population in respect of food for subsistence, in which cereals form the major part, has to be radically changed and a well balanced diet consisting of nutritious foods of both vegetable and animal origin should be introduced. By this means, a considerable saving in cereals can be effected consistent with the high standard of human nutrition and the development of diversified farming in the country.

AN IDEAL ORGANISATION FOR THE DEVELOPMENT OF AGRICULTURE IN INDIA

By: G. D. Agrawal

'GROW more food' was discussed as a current topic in the last Agricultural Economics Conference at Hyderabad. Much stress was laid on the need of changing the psychology of the farmer. Discussion of the topic made me realize the great difference that there is in India in the world of the farmer and that of the expert, whether scientist or economist. In the absence of any organisation to bridge the gulf between the agriculturist and the expert, how unfamiliar the expert is with the problems of the farmer. In fact, our experts have to work to blind ends due principally to their isolation from the farmers. Those who have come in close contact with the Indian farmer know that it is not really a question of changing his psychology. Rather the problem is of providing him with adequate and timely facilities for agricultural development. There is overwhelming evidence in support of this view. I may cite the experience of a practical administrator like Sir S. V. Rama Murti who once observed that when the ryots in Madras were given the necessary facilities they succeeded in bringing under cultivation a much larger area of culturable waste than the target fixed. It may appear strange, nonetheless, it is a fact that both agriculture and the agriculturist in India have been not only the most neglected but also the most exploited.

Simultaneously with the provision of facilities there need be developed an extension organisation to guide them in making proper use of those facilities. What, therefore, has to be recognised is that an appropriate Extension Service is *sine qua non* of agricultural development. The existing organisation falls far short of what it really should be. The need for overhauling the organisation for the

development of agriculture is extremely urgent for proper utilisation of funds and resources. The country has achieved at long last its cherished goal of Swaraj. The ministers are seriously concerned with helping the masses. The country is alive to the grim fact that it must produce or perish. Vast sums of money are being given for the asking for the agricultural improvement and financing of ambitious schemes. No expenditure however huge can be made to flow in right channels or its full worth obtained without a coordinating and interlinking agency. The existing service, which begins from the top and during the process of its flow downwards through the various revenue units, (the province, the divisions, the districts, and the tahsils) finds its resources exhausted before reaching those who actually need its help the most and for whom it is specifically meant—the agriculturists living in the villages. Dr. J. N. Mukerjee rightly states that "the scientific and administrative structure of this development should, therefore, be one built up from the bottom, keeping the reconciliation of broader physical aspects, direction, control and coordination at the higher level."

Even in the U. S. A. where the farmer is educated, possesses large farms and much better resources, the extension service organised under the Cooperative Extension Act 1914 has proved indispensable. According to the Report of the Cooperative Extension work for 1947, "The programme is primarily educational. It is a practical out of school kind of teaching. It applies science to rural situations on a learn-to-do-by-doing basis. It is the teaching of farming and homemaking. It travels on a two lane highway. On one side travelling from the people through the county and the State and finally to the United States Department of Agriculture, are requests for solutions of problems and for guides by which people can help to solve those problems. On the other side of the highway are the facts, information and guidance flowing from the Federal agency and the land grant colleges to the people through the county extension staff."

In the case of the Indian farmer, who is illiterate, cultivates tiny holdings, whose crops depend on highly erratic monsoon and whose resources are the slenderest among the farmers of the world, need for an efficient extension service cannot be over-emphasized. At present the departments are so organised that the properly qualified and paid staff fritters its energies in administrative work and has no opportunities for close contact with the farmer. Their number is so small and the area under their charge so large that either there is none to advise or help individual farmers, or it is the unqualified low paid Kamdar or supervisor who, in actual practice, may be taken to be the Indian substitute of the extension worker in foreign countries. His qualifications, experience, emoluments and aptitude fail to impress the farmer to accept him as his philosopher, friend and guide.

The countrywide move for abolition of zamindari and revival of the village community through the reorganisation of village panchayats offer the most favourable background and occasion for overhauling the existing service organisations. There should be one well paid, well trained and experienced extension worker for every 20 to 25 villages according to their area and population, instead of

separate field workers on departmental basis. The extension worker must be an agricultural graduate. It will necessitate considerable modification in the curricular and methods of teachings of the agricultural institutions to produce the desired type of extension worker. Besides keeping close contact with the village panchayats, he should be able to attend to each individual farmer and his needs. He should be able to win over their confidence by his simple habits, sincerity of purpose, knowledge of facts and by living among them. In the U. P. 35,000 village panchayats are being constituted in about 125000 villages under the new panchayat rules. If we calculate the requirement of extension workers on the basis of one for the area commanded by 10 village panchayats, 3,500 extension workers are needed in the U. P. alone and for the entire Indian Union the number required will be about six times or about 21,000. Their appointment does not mean fresh expenditure, as there will be considerable saving by the elimination of a large rural field staff maintained by several departments. The proposed structure will avoid a good deal of wasteful expenditure and duplication of effort. The Secretary of the village panchayat, who will be a paid man in the U. P., can, in course of time by suitable training, function as the assistant extension worker for the villages in his panchayat zone and also as the secretary of village cooperatives. The village teachers should also help the extension work.

Each province should be divided into agricultural regions according to homogeniety of agricultural conditions. The regions should maintain the experts on departmental basis with their offices preferably in the same building or quite near to one another to ensure close contact and team work. The extension workers should be in direct contact with them and bring before them the problems of the cultivators. The team of experts or scientific workers should consist of representatives of all the branches, e. g., agronomy, soil conservation, farm economy, agricultural engineering, dairying, horticulture, mycology, entomology, agricultural cooperation, health and sanitation, etc. They should, where required, individually or in a team tackle the whole range of problems that may arise. There should be experimental stations higher up in the provinces and on all-India basis where higher researches should be taken up and problems defying solution at regional laboratories should be dealt with.

The organisation proposed may be summarised as follows:—

VILLAGE

Village Panchayat — Village Teacher

Secretary (also to work as Secretary Village Cooperative and Assistant Extension Agent)

RURAL EXTENSION AGENT (an experienced agricultural graduate—one in every 20–25 villages.)

SCIENTIFIC EXPERTS (a team of workers at regional head quarters.)

PROVINCIAL EXPERIMENTAL STATIONS (one or more.)

CENTRAL EXPERIMENTAL STATIONS (one or more.)

Without bridging the existing wide gulf between the cultivator and the experts through the extension worker of the standard and quality as recommended it does not appear possible to get results commensurate with our national expenditure on agricultural development, nor an effective guidance to our research workers or evaluation of the practices and procedures evolved and suggested by them. In the two day conference of Agriculture Ministers Shri Jairamdas Daulatram remarked, "The key to the agricultural progress in America and some other western countries was not so much mechanisation or other modern methods of agriculture as widespread human agency working away at the organising of agriculture development." He further remarked, "Whatever may have been our plans in the past and whatever may be the plans we may formulate today hereafter, they will not, in the present conditions of the Indian agriculturists, fructify to the full unless a large number of whole time and part time, official and non-official workers enable the millions of India's cultivators to put these plans into action. To the extent we supply this need of the Indian cultivator to that extent shall we have made India self-sufficient, if not surplus, in regard to food." The greatest bottleneck in giving effect to this kind of organisation is not the question of finances as the question of getting the required number of extension workers and scientific workers with requisite quality. It is, therefore, suggested that the plan may be tried in one or a few regions in each province. Meanwhile, attempts should be made to train the personnel in a given period, say 10 years.

"INDIA'S FOOD PROBLEM"

By: A. Subbiah

"GROW more food", "Procure more food" have been the slogans for the past four years and yet we have not either grown more food or procured more food to the extent of the country's demand. "Step up production" also has not touched even the fringe of the problem. Provided proper climatic conditions are created, we could effect this slogan for both industrial and agricultural production. The former to a large extent depends on the latter since all human beings require food. It is true we have in districts like Tanjore in Madras and in Provinces like Sindh and West Punjab, a large amount of surplus food grains. How to mop up the surplus?

A comprehensive and p[illegible]oper procurement drive by the Provincial Government will have the desired result. In deficit provinces and districts enough could be obtained either by imports or resorting to better methods of cultivation or bringing more of land under cultivation. While the latter two methods would yield best results only in the long run, the former method will afford immediate cure for the present disease—food famine. At the same time the loss owing to various kinds of pests should be reduced to the utmost extent. This is a positive contribution to the development of food resources.

It is true that the food procure[illegible]

will be effective only if the peasants or owners of lands cooperate with the Provincial Government; but we cannot minimise the importance of 'men of stature' taking charge of food department. Only they have the confidence of the people and with their influence they could work out the plans and reach the estimated targets. Top priority both at the centre and at the provinces must be given to agriculture and its needs and our attitude towards the place of agriculture in our national economy should undergo a radical change. Unless we have plans to deal with the forces of nature, as is done in 'progressive countries' we cannot solve the problem. The increase in the import of food grains will remain, in the words of Mr. J. Daulatram, until the Provincial Governments tighten up their procurement.

The procurement of food grains is directed to save the small peasants and it is they who form the bulk of India's population. The small peasant must know that the procurement plan is in his own interest and it is an attempt to ensure food for him throughout the year. Everything that is left over and above the annual requirements of the peasants, mirasdars and zamindars, must be purchased by the Government at market prices so that there will be no surplus afterwards with the rich to exploit the poor.

It is common knowledge that the procurement can be undertaken only in villages and there is the tendency on the part of some to believe that the plan is intended to rob the village to feed the city. It is not merely the city people but also the people in rural parts who have 'uneconomic holdings' have to be ensured of their food. This task can be discharged only by uniting all popular forces, all popular organisations and political parties and all sections of the community—kisans, mirasdars and zamindars and the Government alike. The formation of United Food Committees in districts, taluks and villages therefore becomes essential if any honest work is to be done towards the direction of effective food procurement. In the villages who will convince the peasant to surrender surplus grain, to give up selfishness, except a committee in which he finds all sections united and whose appeal is the appeal of his own brethren? Besides, the personal contact of Food and Prime Ministers with the landowners have got a magic touch upon them.

The Way Out

The Provincial Ministers and the Food Procurement Committees have no mean task before them.

1. In the towns, villages and cities they must bring home to the people the gravity of the food crisis and strive to unite them.

2. They must fight the tendency to give exaggerated figures of persons per family to draw larger rations and denounce it as stealing of people's food.

3. They must create public opinion against black markets and appeal to the people not to patronise them.

4. They must denounce hoarding in any form.

5. They must support compulsory procurement and appeal to the peasants and landowners to hand over all surplus grain at the same time making it quite clear that only the surplus will be taken from them.

6. They should demand equal treatment between the village and town

mills in India, where there is enough wind and the water table is high, seems not to have been recognised." (Clifford C. Taylor in an article "Wind, Water and Food" in *the Hindu* dated 6-2-1949). Yet another long term plan might profitably include a programme of sending periodically a certain number of Indian representative farmers abroad and getting them trained in the new methods of agriculture. With the implementation of the plans on the above lines not only would there ensue extension of area under protected irrigation and expansion of food crops, but also a balanced agricultural economy for the whole of India.

HOW TO INCREASE FOOD PRODUCTION

By: **Bishan Mansingh**

AFTER the establishment of law and order the first duty of every state is to provide enough food for people in its charge. Unfortunately of late the production of foodgrains falls short of even the bare needs of the people. The National Government is fully alive to this very important responsibility, and has been importing large quantities of foodgrains even at exhorbitant prices from abroad to feed its people. Besides this both the Central and Provincial governments are trying their best to increase the production of foodgrains in the country, with a view to make it self-sufficient in that respect.

Big schemes to achieve this end have been planned and work has been started on some of them. Large fleets of tractors have been imported and plans for the manufacture of artificial fertilisers are ready. For the supply of water, big schemes for constructing new canal systems and extending the existing ones are under consideration. Work is being pushed on minor irrigation projects such as sinking of tube and surface wells, digging of tanks and so on. In order to increase the available quantity of organic manures, manufacture of composts, and the use of oil cakes and bonemeal is being advocated.

This is all very good and very necessary but the big schemes will take years to achieve results, besides involving colossal amounts of money in initial expenditure, which is most inopportune at present on account of exceedingly severe inflation which is far more responsible for the high prices of foodgrains than its scarcity. If drastic and immediate steps are not taken to substantially reduce this inflation a disaster of the first magnitude is round the corner.

But so far the attention appears to be devoted principally to increase food grains production by means of reclaiming culturable wastes which is at best marginal land, and to the procurement of artificial fertilisers. In this article an attempt has been made to examine the possibilities of increased food production on the present area under cultivation, by improving prevailing condition.

About 80% of the population of this country live in villages, who are not experiencing any unusual difficulty as regards their requirements of foodgrains, nor Government has been obliged to make any special arrangements for the

supply of foodgrains to them except in those tracts which were inflicted by some natural calamity. It is the remaining 20% urban population of the country which is responsible for the import of foodgrains from abroad, at exhorbitant prices and thereby depleting the sterling balances which have been earmarked for the purchase of capital goods for the Industrialisation of the country.

The normal produce from the lands after meeting the needs of rural population, supplies more than half requirements of foodgrains for the urban population. This means that if the total yield of foodgrains of the country could be increased by 7 or 8 % our country will become self-sufficient in her food requirements. This is not an insuperable difficulty, if the Government postpones all the big schemes say for three years and concentrates its entire resources to give immediate effect to the following suggestions:—

1. Consolidation of holdings.
2. Crop planning.
3. Provision of moisture in the soils at the sowing time and during the growth of crops.
4. Research.

1. Consolidation of Holdings

The Royal Commission on Agriculture emphasises ".....the evil effects of subdivision and fragmentations are recognised but measures to cope with them have not yet been decided upon. Its evil effects are so great that the administration should not rest until a remedy has been found.....It is useless to think of real enduring agricultural progress without consolidation." B. P. Jain says,* "It is calculated that expenditure for cultivation of land increases by 5.3 % for every 500 meters of distance for manual labour and ploughing, twenty to thirty five p. c. for transport of manures and 15 to 32 % for transport of crops. It has further been observed that on compact holdings the income from farming would be increased by at least 20 % without any modification in method of calculation". This means that this single measure has the possibilities of making India self-sufficient in Food Production.

Consolidation can be successfully effected both through special enactment and through Cooperative Societies on voluntary basis. The example of remarkable success achieved through the former process is the Chattisgarh division of the Central Provinces, while of the latter is the Province of Punjab in particular, and other provinces, on very moderate scale, in general.

In the Punjab just before the partition of the country the number of the Cooperative Consolidation of Holdings Societies was 1,875 with a membership of 240,000. More than 13.67 lacs of acres had till then been consolidated and every year at an average of one lac acres were being consolidated through the Societies.

In my own district of Fatehpur, United Provinces, only one Supervisor was appointed for this work. Up to the 30th June, 1945, 10,115 bighas of land were consolidated in 17 villages and the number of holdings was reduced from 9,825 to 1,091. For the following two years the Cooperative Department, U. P., could not spare any Supervisor and last year in 1948 when the Supervisor was sent the work could not proceed merely

*Agricultural Holdings in the United Provinces, 1937, p. 44.

and if necessary to agree for less rations for light workers in towns and more rations for rural labourers.

7. They should demand less imports and appeal to the surplus provinces to come to the rescue of less fortunate provinces.

The procurement of all surplus grain is not an easy thing to accomplish. It is a task which only the patriotic forces can do. No legal edicts, no orders or ordinances will achieve it because the more ordinances we pass, the more are the tendencies to resort to malpractices. Only the people actuated by the love of their country can do it. Nothing but a huge mass campaign patriotically conducted will achieve it.

Having procured the grains the officials should be very careful in distributing the same. Unlike other goods the agricultural stuff cannot stand the test of time and it must be immediately despatched. There have been cases where grain was completely spoiled because some callous officials have kept in the open in railway stations. There have been not a few cases of theft of procured grain; bags of grain have mysteriously disappeared from the godowns. Both in urban and rural areas the committees should encourage consumers' cooperative societies to purchase and sell grain for their members. Thousands can be organised through cooperative societies to protect their own food and eliminate the black-market. Full advantage should be taken of the government's policy to give preference to cooperative societies.

The governments in most of the provinces have failed in the procurement campaign. Large stocks lie in the villages. The government fixes the prices of paddy but fails or is unwilling to purchase directly from the villagers. This gives room for the unwillingness on the part of the villagers to sell the paddy to the middle-men and no wonder a large stock goes to black-market.

The Food Minister gave the following figures, in the Dominion Parliament, of provincial procurement:

Madras	28.8%
Bengal	14.9%
Bombay	6.5%
Central Provinces	8.7%
Assam	15%
Orissa	6.4%
United Provinces	4.8%
Bihar	2.6%

"It would be seen from the above figures", the Food Minister declared, "that if rationing is to be a success and imports reduced, it can be possible only if there is greater uniformity of sacrifice and a much larger proportion of procurement."

Only the other day in the Dominion Parliament the Food Minister is reported to have said, "I think something must be done to improve the situation." The minister's admission of the unsatisfactory nature of production and procurement, the criticism of the members about the food policy of the government as well as the suggestions thrown out call for immediate and proper understanding of the situation and effect remedial measures simultaneously in all provinces. The following is the summary of the suggestions made on the floor of the Dominion Parliament during the time of food debate.

A solution to India's food problem lies not in short term policies but in her ability to put through big irrigation pro-

jects as expeditiously as possible. Mr. R. K. Sidhwa has really contributed his own share to the easing of the food situation when he suggested that (1) rice should not be supplied in non-vegetarian restaurants and hotels because he said: "fish curry, for instance, tastes just as good with bread or chapatis;" he estimated that this measure would result in a net saving of at least two and a half lakh tons of rice annually which could be turned over to mainly rice-eating areas; (2) the Government must also cease to import food grains by 1950 or 1951 as part of their long term policy. The provincial Governments must be told definitely that after 1950 or 1951 they would get no imported food. It was urged by more than one that coordination between the various ministries concerned was necessary to ensure that the agriculturist got what he wanted by way of implements at controlled prices. The government may encourage large-scale cooperative farming. A Commodity Credit Corporation may be established which would deal only with the villagers. The agriculturist must get all his needs from this Corporation at controlled prices. It is also true that the money spent for importing food grains should be utilized for nation-building activities and for purchasing agricultural improvements. If the procurement of food grains is to be effective the tenants must be asked to pay their rent to the landlord in kind so that the landlord can pay his revenue to the government in kind.

The native manure—cattle dung—must be used only as manure and not as fuel. Much is spent on the import of foreign chemical fertilisers which give only immediate results. There must be proper liaison between the cultivator and the government and the research stations throughout the country. Numerous non-official organisations in America and England have provided this liaison. The setting up of a board for reclamation of land and the establishment of an 'agricultural finance corporation' are some of the suggestions which will go a long way in solving the problem.

The services of various departments of Economics in the Universities will be of much use for collecting agricultural statistics. In the present situation we must have university education with rural bias.

Agricultural production must get an even greater priority than industrial development. The standard of living of the agricultural masses and their purchasing power must be linked up with the vast agricultural wealth of the country. To-day only 0.8% of the budget is spent on agriculture. The government must give top priority to agricultural schemes and plan and spend more money.

To conclude, we might suggest crop-planning and competitive prices for food crops for immediate solution. As a medium term plan we might have a plan for intensive cultivation, extension of cultivation by reclamation and colonization schemes and effective utilization of the existing tanks by means of a comprehensive scheme of repair and renovation.

As a long term measure, the major irrigation projects must be implemented at any cost. "For lifting irrigation water from wells or tanks for India's typical farms of only a few acres, a windmill would be much more efficient than a pair of bullocks, attended by one or two men and drawing up one leather bucket full of water at a time. The usefulness of wind-

for want of requisite forms.

From the above it is clear that the work of the consolidation of the holdings can be pushed on without any apprehension of any severe opposition from the cultivators. All that is needed is that the cultivators should be convinced that they would receive a fair deal. The entire cost of this work can be met by a nominal levy of 4 annas an acre. A further advantage in this scheme is that it will enable the Government to provide work for a large number of Semi-educated unemployed persons at the cost of cultivators.

Today's paper announced the Budget Proposal of the United Provinces Government. One item of which is that all the tenants who pay the rent of their holdings for ten years in advance will have to pay only one half of the present rent as Revenue for their holdings in future. This privilege should be made conditional on the acceptance of the cultivators to get their holdings consolidated. This action on the part of Government will lead to the consolidation of holdings throughout the whole Province, at the cost of the cultivators.

When the holdings are consolidated the angle of vision of the cultivators towards agriculture will be quite changed. They would naturally like to live on their farms, sink wells or provide other sources of irrigation, will be in a position to improve their cattle and crops, will make soils for conserving fodder, and manure pits for composts. The initiative for all this will arise from within and the Government will be saved from incurring huge expenditure in order to popularise the above-mentioned practices.

It might be argued against consolidation of holdings that if the present system of peasant farming is replaced by cooperative or collective farmings then all the trouble and expenditure incurred on consolidation will be in vain. But this is not correct, even in cooperative and collective farming the fields will have to be given proper shape, roads will have to be built, water channels to be rearranged and pasture lands to be demarcated and so on. In view of the facts mentioned above consolidation of holdings is to be given priority number one in all agricultural development schemes.

2. Crop Planning

Agriculture of peculiar and particular tracts should be planned according to the rain fall e. g. the cultivation of paddy and sugar-cane should be concentrated to areas of heavy rain fall. It is possible to grow most successfully sugar-cane with the help of tube well water in the western districts of this Province for some years, but our posterity will have to suffer most grievously for our misguided agriculture. It should be known that the underground supply of water in northern India is not unlimited; it is bound to be exhausted at some future date, if no arrangements are made to replace it, and if it is recklessly wasted in growing crops requiring large quantities of water. Better yields with less trouble and expense can be procured by planning agriculture according to rainfall. The amount of water needed for one acre of sugar-cane will be sufficient for four acres of wheat and cotton. Wheat and cotton are in no way less, rather more, essential to our existence than sugar-cane.

3. Provision of Moisture

"Lack of moisture for germination is possibly the most important factor contributing to crop failure". This results in poor plant population in fields and the

loss thus sustained cannot be made up by subsequent waterings. Provision for this can be made if the Government and the cultivators cooperate and follow the methods suggested by C. H. Par in his article "Use of surplus Monsoon River Water to increase Crop production," published in Indian Farming, September, 1947.

I may mention here that I had the privilege of knowing Mr. Par for a very long time and by experience I have found his advice very beneficial to crops. I collect and utilise rain water for this purpose.

The expenditure incurred by Government in constructing inundation canals and in increasing the capacity of existing canals for carrying monsoon river water will be much smaller in comparison to construction of works like Nayar and Rihand dams, while the benefit to cultivators much greater; for water will be available in large quantities to both Rabi and Kharif crops at the most opportune time. In this connection my article, "Harnessing Rain Water", published in a number of papers may also be seen.

Research

The budget on this particular branch of agricultural development is being increased every year by leaps and bounds. It is not a waste; it will prove most useful in the long run. But the results so far achieved are not encouraging probably due to paucity of really efficient research workers in the country. To overcome this shortage large number of foreign Scientists should be imported specially from Germany and the United States, and in addition to the salaries some rewards should be promised for remarkable discoveries in the field of research. Any Scientist, Indian or Foreign, who succeeds in discovering a satisfactory cure for wheat rust or produces a strain of long staple cotton which can be successfully cultivated under barani condition in the Bundelkhand area of this Province, may be rewarded, say, one lac of rupees. The temptation of reward will create great enthusiasm among the research workers.

Along with the research work there should be a separate section in every branch of research, the personnel of which should be mainly employed in collecting all the available materials on research found in India or foreign countries and systematically arranging it for the use of research workers and others. The results thus obtained should be placed in the hands of District Agricultural Officers for field trials in their circles. This practice will produce quick results with very little cost to Government in comparison to what is being spent on research work.

All these four suggestions made here if given effect to by the Central and Provincial Governments might lead to considerably increased production of foodgrains in not very far future and will ensure lasting and permanent development of Agriculture, thereby making India self-sufficient in Food production.

In writing this article economic implications of the suggestions have been kept in the fore-front.

In the absence of efficient Transport arrangements increased production cannot make India self-sufficient in Food. What is needed is that the drive for increased production and proper Transport arrangements should proceed side by side.

AGRICULTURAL FINANCE

RESERVE BANK'S ROLE SURVEYED

By: Prof. G. P. Gupta

AGRICULTURE has been described as the 'Primary Industry' of India but the financial aspect of the 'Big Industry' has been too inadequate and unorganised. The Government has always been niggardly and apathetic in solving financial problems of agriculturists and whatever few attempts were made in setting up institutions to provide organised credit facilities for all the operations of agriculture, the results have been very poor. The chief financing agencies which cater to the needs of the rural population are still mainly the indigenous money-lenders and bankers, though at certain places the co-operative societies have gained ground. The indigenous money-lenders have always kept the agriculturists under their tight grip and the latter have been their financial victims so that 'they are born in debt, live in debt and die in debt.' The co-operative movement was, of course, launched to supplant these 'Indian Shylocks' but it has not achieved the desired results during its life of half a century.

Role of The Co-operative Movement

The co-operative credit organisation started with a view to provide organised and adequate finances in a democratic way to the agriculturists has touched only the fringe of the problem. The agriculturists as a class could not be brought under the purview of the movement. At the end of the war the number of agricultural credit societies providing finances to the immediate needs of the agriculturists was only 112, 951 with a total membership of nearly 3,575,470 persons. The amount of working capital of these societies was 2589,11 lakh of rupees. This position does not warrant the satisfactory progress of the movement partly due to remote indebtedness to the money lender and also partly due to inefficiency of the co-operators. The method and manner of securing loans from the societies have been regarded by the agriculturists as a cumbersome affair and their illiteracy has made a vital contribution to their indifference towards the societies. The persons-in-charge of the loan offices who could initiate the organised credit facilities to the illiterate farmers followed the let-go policy and the step-motherly attitude of the Reserve Bank towards the societies led them to their premature liquidation. The agriculturists still cling to the village bania.

Long-Term Credit Institutions

For long-term needs of the agriculture Land Mortgage Banks were designed to provide organised credit. Beginning was, however, made in Madras where a land mortgage bank was started in 1929. Bombay followed with a central institution in 1935. But in other provinces the technique of land mortgage banking is still either imperfect or hardly developed at all except that Mysore and Cochin have recorded a considerable strength of their position. Co-operative Land Mortgage Banks have so far advanced loans almost exclusively for the redemption of old debts and the need of long term finances for agricultural improvements has received the least attention. It may be admitted that unless the Indian agriculturists are

relieved of the heavy burden of remote indebtedness agricultural salvation is not possible at their hands. But the factor of rural indebtedness has now practically ceased to be oppressive to the agriculturist, thanks to the war-time rise in prices. Even then the land mortgage banks could not proceed far ahead in the matter of financing improvement of land and methods of cultivation. During the previous years the tendency to approach the LMB has been nonetheless curtailed due to facilities afforded by the Government for improvement of land in furtherance of the 'Grow More Food' campaign. These factors led to a curtailment of demand of fresh loans and advance repayments of loans became a common feature. The banks are faced with the problem of surplus funds to canalise them into investment channels. The Land Mortgage Banks have not thus presented a bright picture with the result that agricultural improvements have not been given due attention.

Role Of The Reserve Bank

With a view to co-ordinate and organise the agencies supplying rural credit it was planned at the time of framing the Reserve Bank of India Act that the central bank of issue should play a fundamental part in providing rural credit facilities. Hence the Agricultural Credit Department was added to the Bank to:—

(1) Study questions of agricultural credit and to give advice to institutions and organisations which want to consult it.

(2) Co-ordinate its agricultural operations and relations with Provincial Co-operative Banks and other banking institutions.

Duty was laid on it to submit a report before 31st. December 1937 with proposals, if it thought fit, for legislation on how to extend the provisions of the Act applying to the scheduled banks, to indigenous bankers and persons engaged in banking business and to improve the machinery for dealing with agricultural finance. But fourteen years have passed and no serious attempt has been made to organise rural credit facilities. The Department has been almost an agency for research work in agricultural finance and it has assumed a position to give advice only to persons and institutions as may seek from it. It is not entrusted with funds and so it has its own limitations.

Reserve Bank And Money-lender

In order to introduce a system of organised credit in agriculture it was thought imperative that the indigenous bankers should be brought under the direct orbit of the Reserve Bank. The Bank, therefore, prepared a scheme in August 1937 laying down concrete proposals based on the report of Central Banking Enquiry Committee to extend direct rediscounting facilities to the indigenous bankers. They were required to confine their business to that defined by the Indian Companies Act. They were asked to maintain proper books of accounts and to get them inspected by the Bank. This scheme was tentative for five years. Such bankers were to get direct rediscounting facilities as were enjoyed by the scheduled banks. The representatives of indigenous bankers on this scheme agreed generally to give up speculative business but they were not prepared to confine themselves to banking business only. In 1941 the Reserve Bank of India enquired of the Bombay Shroff's Association as to how many members of

the Association would be prepared to accept a modified scheme based on agreed proposals to discard non-banking business within a certain period of time. The Shroff's Association suggested five years as the period for affecting legal segregation of banking and non-banking business for approved indigenous bankers and agreed that accounts would be published, but the Association could not give assurance regarding the exact number of bankers who would be willing to join the scheme. The scheme was ultimately abandoned.

Realising that the co-operative movement has touched only a very little percentage of the population and that the money-lender was still the largest supplier of finance, it was thought that the possibility of utilising the agency of the money-lender should be explored. The Reserve Bank made another important effort in January 1938 for providing finance for marketing agricultural produce through the money-lender. The Bank offered to re-discount at concession rates through the scheduled banks the bills of approved money-lenders drawn for making advances to agriculturists against the security of produce provided that the benefit of the low rate was passed on to the agriculturists. The Scheduled Banks declined it on the grounds that they were not in a position to gauge the money-lenders' credit readily nor would it be possible for them to dictate the rate of interest to be charged by the money-lender from the cultivator against the produce bills. They also feared that under the keen competition there will be little scope for them to rediscount such bills with the Reserve Bank of India. The scheme failed and was therefore given up.

Reserve Bank and Co-operative Movement

The Reserve Bank made certain attempts to organise rural credit also through the co-operative movement, by circular of 14th. May 1938 laying down a procedure to be followed by Provincial Co-operative Banks to get finance from the Bank. But unfortunately the response to this circular was very poor and so another scheme was prepared in 1942 under which the Reserve Bank of India offered to grant accommodation under 17 (2) (b) and 17 (4) (c) for crop marketing at concession rate of 1% below the Bank Rate provided the benefit was passed over to the borrower. The expectation was not realised and only one Provincial Bank borrowed a small sum of money at 2% and the ultimate borrower got finance at 5%. In November 1944 the scheme of rebate was extended to cover bills and P/N drawn for financing seasonal operations also. Again the rebate was increased from 1% to 1½% in 1946. It may be pointed out at this stage that special rebate of 1½% was allowed to the U. P. Provincial Co-operative Bank upto the end of March 1946. Even so only one Provincial Co-operative Bank availed of the facilities offered under the scheme to the extent of 3.55 lakhs of rupees by the end of 1947.

Section 17 (4) (d) of the Reserve Bank of India Act which presupposes the establishment of licensed warehouses and creation of negotiable warehouse receipts has so far, remained, a dead letter on the statute. A Warehousing Bill was therefore drafted and circulated to all Provincial Governments recommending its adoption with modifications to suit local conditions. But only two or three provinces have so far chosen to undertake legislation on the subject.

A Dispassionate View of The Bank's Activities

It has been seen that one of the spheres in which the Bank has achieved nothing is the sphere of Agricultural Finance. But a dispassionate enquiry would reveal that the blame should also be laid at doors other than those of the Bank. The Reserve Bank was expected

to provide cheap finance through the medium of Co-operative Banking system. But when the medium itself was imperfect as already reviewed, how could the Bank be expected to achieve any results? The Reserve Bank tried to perfect this medium and suggested certain measures with this end in view, but as the Chief Agricultural Officer of the Bank has put in, it could not be done for lack of co-operation from the Provincial Governments. Legislation could have been passed to improve the Co-operative machinery but it was the statutory duty of the Provincial Governments. One of the vital documents required by the Reserve Bank of India Act for providing finance for seasonal agricultural operations or marketing of crops is warehouse receipt. But there were no warehouses to secure such facilities which should have been provided by the Provincial Governments. It is claimed that Reserve Bank was sincere in whatever few attempts were made to provide cheap finance to agriculture, but prevailing conditions and the means to discharge were not found favourable for a central bank of the country. Moreover during a short life of nearly fourteen years the Bank had to face very serious repurcussions in the country. For the first few years the Bank could only study the conditions and collect relevant information after which the war broke out and many unprecedented conditions set in. Now that the war has ended and the Bank has become purely a National Institution it is hoped that the question of rural finance so dear to the country as a whole would be given top priority. Nonetheless it can be said that the Reserve Bank as the Apex institution of the country could have easily mobilised public opinion in its favour and forced the Provincial Governments to act. The Bank should have acted to the local conditions of the country. Mr. K. Subbarao, Chief Agricultural officer of the Reserve Bank of India, has pleaded that the Bank has all along adopted a nursing and fostering attitude towards the Co-operative Movement. He claims that the Bank's attitude is not certainly that of an indulgent mother spoiling her child but that of one anxious to bring up a sound and healthy offspring. But this has been nothing but 'keeping hands together and waiting for the chance' policy of the Bank which far from infusing 'soundness' and 'health' in the Co-operative Movement could not save it from deterioration and ruin. The Bank should now take up to very serious efforts in providing finaces for agriculture.

Future Role of The Reserve Bank

The above is an account of the efforts made by the Reserve Bank to improve facilities for agricultural finance in our country. The indigenous bankers have not yet been brought under direct rediscounting facilities. This should be done in the interest of improving agricultural credit. The demands of the co-operative movement should be satisfied and the co-operative movement should be reconstructed. A portion of the annual profits of the Bank should be allocated for the development of the co-operative movement. The interpretation placed on the Section 17 (D) of the Reserve Bank Act should be changed so that the Bank should be able to advance funds against documents of title merely. The Reserve Bank should invest in debentures of the Land Mortgage Banks. The Agricultural Credit Department should be directly entrusted with funds on the model of the Rural Credit Department of the Commonwealth Bank of Australia. A special machinery for the inspection of the money-lenders should be set up. The possibility of adding a new long term mortgage department of the Reserve Bank on the model of the Australian Agricultural Mortgage Department of the Banks of Iceland and Costarica should also be considered. This Department will be a help to the Land Mortgage Banks of the country. In this connection the working of the Australian model should be well studied. The Reserve Bank of India Act should be amended to extend the period of rediscounting agricultural bills from nine months to atleast one year as already suggested.

Now that the Reserve Bank of India has been nationalised it is sincerely hoped that the question of orgauised agricultural credit would be given top priority.

A SCHEME FOR IMPROVEMENT OF AGRICULTURE ON MASS SCALE

(WITH PARTICULAR REFERENCE TO SOURASHTRA)

By: A. K. B. Cazi

AFTER careful study, experimentation, actual working and observation as Director of Agriculture, Junagadh State, the following scheme for mass adoption is laid down. The scheme is very simple in operation yet its usefulness is so great and comprehensive that its adoption would, beyond all doubt, revolutionise the agricultural industry enabling the agriculturist to get better crops and be self-sufficient for timber and fuel, and, if you like, for cordage also.

The scheme envisages the following results obtained on mass and rather at one stroke:—

1. Prevention of surface soil erosion.
2. Even distribution of rain water over the fields.
3. Drainage of excess of rain water.
4. Prevention of weed seeds from entering into a field from the high-land outlying areas.
5. Reclamation of waste land adjoining the field and merger of the former with the latter.
6. Creation of village forests.
7. Nitrification of soil.
8. Barriers against maranders.
9. Supply of cordage.
10. Afforestation of denuded forests and even naked slopy hills, and
11. Improvement of pasture land.

Material and Means

All that is required to pursue the scheme are simple hand tools viz. the pick axe, the shovel and *ghamela* or bamboo basket, besides seeds and bulbils. Every cultivator possesses these tools, and therefore has not to spend on purchase of these specially for this purpose. The seeds required are those of *Casia Siamica*, an exotic tree not found in Sourashtra except in Gir and Girnar forests in just small patches where it was introduced as a measure of experiment. But these seeds can be obtained for them. The seeds are, no doubt, costly being exotic and available only from seeds-men at Rs. 90/- per lb. containing about 2000 to 2500 seeds. But if the seeds are ordered in bulk from the Conservator of Forests, Assam, the cost would be considerably lowered down. The bulbils of agave (*Ketki*) are easily available locally. In addition to these materials the scheme would require human labour. The cultivator will not find it difficult to put in his own labour or the labour of his family as the scheme could be executed at the time when he has spare time, viz. before the advent of monsoon or well in advance of the farm tillage operations.

Operation of the Scheme Explained

The method of constructing trench-bunds and the principles underlying have been demonstrated and explained to the *Talatis* of the State. The main idea behind the construction of trench-bunds is to obstruct the surface flow of rain water. It is the force of surface run of water that carries away the fine particles of surface soil dislodging them from their Situ and exposing thereby the lower unfertile strata of soil. Due to continuous

exposure of soil to surface erosion the affected portion of fields becomes barren and incapable of supporting the field crop. Such continuously eroded portions of the field therefore have to be assigned the position of the waste land adjoining the cultivated field. But there is continuous struggle going on between the nature's recuperative and disintegrating processes creating surface soil on one hand and the erosive processes of surface run of rain water on the other. If the latter is stopped, the soil is easily created sufficient to bear the field crop. Thus many a waste land adjoining cultivated fields can be automatically merged with the cultivated land if barrier is placed against surface erosion. This can be done by constructing trench-bunds all along the highest running boundry line of the field. The usual dimensions of the trench are 2′ wide at surface, 1½′ deep and 1¼′ wide at the bottom and the excavated soil is thrown on the lower bank of trench, which forms a line of raised bund. This bund though looks small in comparison with the advocated costly bunds constructed by tractors etc., will stand even a heaviest downpour of rain, since the trench which intervenes the flow of water from higher level acts as an effective safeguard against the force of the water flow. If there is a waste land adjoining the field running along its higher border, not only the surface flow will be impeded but the weed seeds that are disseminated and carried into field, year after year are caught into trench. The two thieves that cause the greatest havoc of the Agriculturist's fields, viz., the surface eroding water and the weeds, are thus kept at bay. If the field is large and slopy then one or more trench bunds of the shallower dimensions need be constructed according to the extent of the field and the slope, across the slope more or less on contour line. These trenches may not be continuous but their length may be interrupted by unexcavated portions of a foot or so, in order that water in the trench is held up at longer periods and gradually soaks through into the soil at lower level of the field and at the same time feeds bunds through capillary system so that the latter remain moisture laden for a considerable length of time thus enabling it to support the crop of trees and agave. The bund will be in the shape of a ridge. On one side of the ridge, the bulbils of agave may be plantad soon after first heavy showers and on the other side seeds of Casia Siamica 5′ apart may be planted. During the incessant heavy rainfall which is uncommon on this side, the surplus moisture has to be removed if we want to save the crop from lodging. The greatest bulk of our crops is millets which appreciate water-lodging the least. The trenches in the field therefore act as drains to carry away excess of water. It may be remarked here that while ploughing a slopy field, the operation should be done in the bed prepared with ridges and furrows across or at right angle to the slope. Thus ridges and furrows are exactly the miniature forms of trench-bunds. The much slopy fields, therefore, should have a series of ridges and furrows intervened at intervals by trench-bunds all running parallel to each other and following contour line. The contour trench-bunds will act as permanent guide as to how you should plough your fields. This is the best way to get the surface so ruffled as to obstruct the erosive force of the flow of water at every step and enable the crop to stand in parallel rows with tillable or culture gaps. Unfortunately the ploughing and ridging

and furrowing on slopy lands are being done in any conceivable directions not excluding the very worst manner of following along the slope as one could view from a railway window as one travells crossing fields after fields. The opening of the fields in any way except the right way has been responsible for the ghastly havoc of erosion which is not inconsiderable in magnitude and the sooner this is realised, the better.

Casia Siamica is an ever green tree and is drought resistant par excellence. It does not throw shade that is capable of suppressing the field crop especially when the tree is allowed to go straight up without much branching. Thick sowing at 5′ apart will make the plants go up straight.

After 4 or 5 years the plants may be thinned and these thinnings will provide the first fuel to the cultivators from this source. Thinning is necessary to allow the boles to develop. Second and subsequent thinnings may be necessary periodically so that finally you should get a crop of tall straight plants 20 feet apart. The wood of this tree is hard and besides being useful as fuel can be utilised for various purposes. The branches of the trees can be lightly lopped periodically and loppings used as fuel until the tree is mature to be cut. Loppings will make the bole to develop better and at the same time reduce the area of shading. The tree after cutting regenerates by coppice and therefore once introduced by seed requires no further care, or reseeding. The tree grows very fast and being drought resistant can be grown on rain water only. It sheds leaves which add to the humus contents of the soil below. Being Leguminous, it carries nodules of nitrifying bacteria on its lateral roots thus enriching the soil with nitrogenous manure. It bears beautiful flowers and is thus an ever-green ornamental tree.

The use of agave (*Ketki*) is well-known as a hedge plant. There is no difficulty to establish this on the bunds constructed as advocated, on monsoon rain water only. The agave will provide constant supply of cordage to the farmer, more than enough to supply his needs and if every cultivator follows the scheme, the trade can be built up out of the surplus cordage. Moreover, this plant when full grown is an effective barrier against marauders and also goes to strengthen the bund. The plant is useful in many other minor ways.

That is so far as agricultural fields are concerned. As regards village *gouchers*, it would be advantageous to construct contour trench-bunds to prevent soil erosion where the area is slopy. These constructions should be of smaller magnitude, running at smaller distances apart so that the animals may not find difficult to walk over. Left like that without further ado, not only the grass will be more plentiful than before but the better quality of grass will appear in place of inferior one as a matter of natural course. If further trouble is taken to plant the root stocks of *giant star grass* (available from the Department of Agriculture, Junagadh) on the bunds shortly after the first heavy showers of rain, you will have introduced the best possible fast spreading grass that could be introduced in this part. Improvement of *Gaucher* in this way can be undertaken by joint or co-operative labour of the villagers concerned.

So far as aforestation is concerned, contour trench-bunds have worked wonders. But this is a matter for forest staff and not for agriculturists. Hence need not be discussed.

Prospectus of The Rural Workers' Training Institute

ADARSH SEVA SANGHA, POHRI, MADHYA BHARAT

1949-50

Object

THE object of the "Rural Workers' Training Course" is to give thorough grounding to rural workers, both men and women, in theory and practice of rural development. The training while embracing all-round development of village life, will particularly, initiate the trainees to the methods of Planning on the basis of Economic Democracy, Social Security and Village Administration to meet the five essential requirements of the villagers—Food, Clothing, Housing, Health and Education, including Means of Communication.

Period of Training

The period of training will be of one year from the 15th of April, 1949 to the 14th of April, 1950.

Qualifications for Admission

The candidate wishing to join the 'Training Course' should have the following qualifications :-

1 He should have faith in the establishment of a new World Order based on the principles of Economic Democracy.

2 He should be prepared to live and practise the three principles of Economic Democracy; viz., Service Motive, Planned Life and Full Employment in his every day life.

3 He should be inspired with patriotic love and zeal for the service of the villages and be imbued with a desire to improve them at personal sacrifice.

4 He should have a good knowledge of Hindi and English to be able to follow lectures in both the languages. His educational equipment or general ability should be that of a graduate standard.

5 He should be a non-smoker.

6 Wearing of Khadi is essential.

7 He should strictly observe the discipline and the daily life of the Institute.

8 He should be of good physique capable of putting in hard manual labour. He should instinctively be a lover of hard life and be able to withstand the privations of life in villages.

Course of Training

(A) **Theoretical:—**

(a) The following are the subjects for Study:—

1 Theory and Principles of Rural Reconstruction.

2 Principles of Planning for the establishment of Economic Democracy and Social Security.

3 Rural Survey.

4 Village Administration and the Working of Panchayats.

5 Organisation and Working of a Village Centre.

6 Scientific and Advanced Agriculture with particular reference to regional Food Self-sufficiency.†

7 Live-stock Improvement.

8 Development of Cottage Industries.

9 Training in Cooperative Principles and Methods.

10 Rural Education.

11 Rural Health and Sanitation.

12 Nutrition and Balanced Diet.

13 Social Aspect of Village Reconstruction.

14 Importance of Moral and Religious Background.

15 Rural Housing.

16 House-keeping and Home Decoration.

†Since, the country at the present is faced with acute food-shortage, the students will specially be qualified to raise production potential of lands under cultivation and ensure regional self-sufficiency in food.

ruin of public life in that area. Wrecking a Food Production Conference through Governmental non-cooperation is no other but the case of moral anarchy, confusion of ideas, unpatriotic outlook, personal and party prejudices and misuse of power and Government authority for destructive and nationally harmful ends.

The mischief, as was obvious, did not confine itself to the wrecking of this Conference alone. Almost simultaneously it had its reactions in the inner Congress circles as well and there was the motion of no-confidence sponsored against the Joshi Ministry by another rival group headed by Shri Vijayavargi. Joshi Ministry has since then resigned. The formation of new ministry is not yet complete and political deadlock in Madhya Bharat politics continues.

Speaking about ugly developments of the Congress administration in Madhya Bharat, Sardar Patel, in his recent visit to Indore, felt compelled to threaten the administration with the dissolution of the Ministry, if those responsible for it do not improve themselves and stop quarrelling between them. His speech in part reported in the press is :—

"CONGRESSMEN WHO QUARREL EVERY DAY ARE NOT TRUE CONGRESSMEN. THEY ARE DIGGING THE GRAVE OF THE CONGRESS. IF WE CAN NOT FIND SUITABLE CONGRESSMEN TO RUN THE ADMINISTRATION, SERVICES OF COMPETENT NON-CONGRESSMEN SHOULD BE ENLISTED."

"IF CONGRESSMEN IN MADHYA BHARAT DO NOT CONDUCT THEMSELVES PROPERLY, I SHALL DISSOLVE THE UNION AND SEE THAT THE CENTRAL GOVERNMENT ASSUME CONTROL OF THE MADHYA BHARAT ADMINISTRATION."

We doubt, if political life in Madhya Bharat has improved since this strong and unpalatable warning was given by the Sardar and the two groups of Congressmen have compromised their differences and settled down to run administration with efficiency and in a team spirit. It is yet to be seen whether lust for power, group rivalries and bickerings among leaders of the Congress to which Sardar Patel drew pointed attention in the course of his public address at Indore, are giving place to breadth of political outlook, magnanimity of heart, sense of public duty and sacrifice of personal ambitions and interests to the greater good of the nation and humanity. However desirable this change in human nature in the interest of higher public life and better administration of Madhya Bharat may be, a destructive pattern of mind at work of which there is accumulating evidence in Madhya Bharat can hardly be changed into a constructive one notwithstanding our best wishes in the matter. This, of course, must affect administration and all good and constructive undertakings including the holding of "Food Production Conference".

Sardar Patel himself was disappointed to find that the suggestion he made when he had visited Gwalior last to start agricultural farm and to demonstrate to the cultivators better ways of improving food production was not carried out by the Madhya Bharat Ministry. They have, however, thoroughly well carried out the suggestion in its negative aspect and wrecked the holding of the Session of the All-India Food Production Conference, where a group of villages connected with Deori Centre, which was deficit of local food supply to

the extent of 32% in the year 1938-39, now in the course of 10 years in 1948-49 not only becomes self-sufficient, but also becomes a surplus area to the tune of 92%, was to be demonstrated. Since, the primary party responsible for holding this Conference and putting up this and similar demonstrations, proving thereby success of the experiment of 'Regional food self-sufficiency' was Adarsh Seva Sangha and not the Madhya Bharat Ministry, such a thing, as common human nature goes, could not be to their liking. And they succeeded remarkably well in their efforts not to have such a food production experiment demonstrated in an area where they hold supreme Government authority.

The two crises developed together have met with destructive end. The Food Production Conference had to be postponed indefinitely and the Joshi Ministry in Madhya Bharat has gone out of office. Political conditions in Madhya Bharat are still unsettled and unstable. It is yet to be seen what the future holds in store for this area. Till then, the organisers of the All-India Food Production Conference ask for sincere apology of their sympathisers, well-wishers and workers for all inconvenience and financial loss they have been put to and wait for the return of stable political conditions in Madhya Bharat and the coming in power of a Government with constructive purpose and outlook in administration.

NOTE

WANTED WILL AND DRIVE

We share with regret the sense of shock and disappointment with which the news of indefinite postponement of the All-India Food Production Conference may have been received by the vast circle of our readers sympathisers and constructive workers, all over India. Those who had eagerly hoped and waited for a definite lead from this Conference, will find it difficult to reconcile to the fact, why the Madhya Bharat Government should after all dissociate itself with this most pressing and non-party cause of food production and come in the way of the Prime Minister and the Food Minister of the Government of India to associate with it. But the friends who have followed recent developments in Madhya Bharat politics will find it to their relief that this Conference crisis is just a part of the big moral and political crisis that is developing in that unfortunate area. If top-ranking Congress leaders quarrel and pull down each other and delight in fighting and non-cooperating between themselves and spoil the administration for which they hold public responsibility such people are obviously capable of spoiling and non-cooperating with any noble cause under the sun. And, the All-India Food Production Conference, of course, cannot be an exception.

In the circumstances stated as above, due to unforeseen developments resulting in the postponement of the Conference, we take the liberty of publishing the contributions, opinions, suggestions and resolutions of our eminent friends and workers sent for the deliberations of the Conference, in the present Special Food Production Number of "Rural India" for the benefit and guidance of our readers and workers. For, ultimately it is they who are the salt of this land and whose labour and sweat hold the promise of making India self-sufficient in food.

Suggestions, contributions and resolutions coming as they do from eminent leaders, administrators and practical workers in a nutshell represent consensus of opinion of the best brains of the country and deserve serious attention of the Governments, both Central and

17 Means of Transport and Communication.

18 Village Defence.

(b) There will be a well-equipped Library on all subjects for reference and study.

(B) Practical :—

Practical training will be imparted both at the Institute and in the villages. Training in the following Cottage Industries will be given at the Institute:—

1 Hand-spinning and Hand-weaving (Khadi-work)

2 Paper-making (Hand process)

3 Match-making (Hand process)

4 Bee-keeping

Each candidate will be required to undergo complete course of training in at least one of the industries. He will however have the liberty to get a working knowledge of other industries as well, provided he has time for the purpose. In addition to instruction in the technic of each industry the candidate will be given training in the management and keeping of accounts thereof.

Practical training in villages is meant to develop contact with the villagers, to understand their psychology, to develop administrative capacity and to test the principles studied at the Institute in their application to rural conditions. While working in villages, the trainees will specially be initiated in the following:—

1. Survey of village conditions.
2. Planning for all round development of village life on the principles of Economic Democracy.
3. Organisation and working of a Village Centre on the basis of Cooperation and Self-help.

(C) Study Tour :—

After the students have completed their theoretical and practical training at the Institute, those who can afford, will be taken on an all-India study tour for a period of one month in order to equip them with practical knowledge of nation-building activities at different centres in the country. The expenses of this tour will be about Rs. 750/- per candidate.

Hostel Arrangement

The candidates will be provided comfortable lodging in the Hostels of the Institute.

Mess Arrangement

There will be a common mess for the students where two regular meals will be provided along with breakfast in the morning and light refreshment in the afternoon. The food supplied will be vegetarian. To those who like to cook for themselves, there will be separate arrangement.

Monthly Expenses

The monthly expenses of a trainee will come to about Rs. 75/-

Food and breakfast	Rs. 50/-
Training in Cottage Industries & other fees	" 10/-
Miscellaneous	" 15/-
	Rs. 75/-

Each trainee will be required to attend to his personal needs and provide himself with necessary requirements. He should bring his own lantern for use at night.

All money for the monthly expenditure of a trainee will have to be deposited in advance in the office by the 10th of each month at the latest. At the time of admission, a trainee will be required to deposit Rs. 10/- as Library security and Rs. 25/- as an amount for special exigencies.

Monthly accounts along with the progress report of the trainees will be supplied to the guardians and the authorities concerned.

Note-Pohri is connected with Gwalior, Jhansi, Ujjain, Indore and Guna by Bus services of G.C.I.T. Co. Via Shivpuri.

For further information write to,

The Principal,
Rural Workers' Training Institute,
Pohri, Madhya Bharat.

RURAL INDIA

Vol. XII, No. 5] MAY-JUNE, 1949 [Whole No. 123

"Salvation of India lies in Cottages." —*Mahatma Gandhi*

ALL-INDIA FOOD PRODUCTION CONFERENCE, POHRI AND THE CRISIS IN MADHYA BHARAT GOVERNMENT

IT is revealing though nonetheless painful that the two unfortunate developments should have so coincided in Madhya Bharat. They are dissociation of the Madhya Bharat Government with the All-India Food Production Conference, Pohri, and the crisis in Madhya Bharat Cabinet affairs. It seems, it was so destined that the two crises should develop simultaneously.

As early as February last, Shri Liladhar Joshi, the Prime Minister of the outgoing Ministry in Madhya Bharat, was officially approached for Cooperation of his Government in the work of the proposed All-India Food Production Conference and he was good enough to give written assurance of the good will, sympathy and cooperation of his Government. We were only astonished to discover later on, as to what transpired in the course of the next one month or so and had this pledged cooperation changed into one of non-cooperation. The tragic part of this unedifying drama is that active steps were taken by the Madhya Bharat Government to dissuade Pandit Jawaharlalji and the Food Minister of the Government of India, Shri Jairamdas Doulatram, not to participate in this Conference, which they had consented to do earlier. And all this was carried out secretly without any knowledge or official intimation given to the organisers of the Conference and that too at a stage when large scale preparations had already been made for the Conference and huge amount of public money had been spent.

We fail to understand why the Congress Government of Madhya Bharat which stands officially committed to work up the programme of food production in their area on the basis of war-emergency rather than encouraging and cooperating with the Conference should think it their worth while to dissociate with it and thus wreck the cause of food production which should have received all possible support from the Government quarters. If it was the consideration of party politics, food, clothing and shelter have been recognised as primary needs of human life and they have been treated as non-party questions the world over including our own country. It will be disastrous to the future of this country if politics and party considerations start dominating the essential needs of the citizen as food and clothing.

All this seems to be the work of destructive mentality which is at work in Madhya Bharat and which is the cause of

Provincial. The Government of India is to be congratulated for having taken wise and timely decision to stop imports of food grains from abroad after the year 1951 and to make India completely self-supporting in the matter of food supply in the course of the next two years. The decision is bound to impart special vigour and drive to the Government's plan of food production in the years to come.

It is only to be expected that while launching the new ambitious programme, the Government would avoid mistakes which in the past were responsible for the failure of 'Grow More Food' campaign, the main of which was the absence of Central Planning and direction. If Provinces are left free to plan and execute in a way they like, without strong drive and direction from the Centre, we are afraid, the results may not be very different from what we have obtained hitherto.

Then, scattered efforts at providing facilities to ryots without scientific and integrated planning from the Centre down to the remotest village and field of production do not hold promise of producing sure and tangible results. Digging a number of tanks, sinking of wells, putting up bunds, distribution of manure, seeds, etc., bringing new and uncultivated areas under the plough are all good adjuncts to planning, but by themselves they do not hold any guarantee that these facilities will be rightly availed of by the ryots and that the required quantities of food grains will be produced as a result thereof. This may again be banking on a vague hope and miscalculation, which may produce results not very much dissimilar to what we have already seen in the case of 'Grow More Food' campaign.

Increase of 10% of additional food in the country is not at all an impossible job, provided the Government makes a right approach to the problem and adopts methods whose success has been tried on the basis of past experience. In the course of their contributions in the current issue, Dr. C.N. Acharya and Shri Jogiraju have drawn attention of the Government to organise 'Food Production Drive' on the basis of 'Regional Food Self-sufficiency'. Since the Government accepts the responsibility of providing food to the entire population of the country, it naturally follows that they should take into account food requirements of every village or unit of villages and production potential of every cultivated field in that area. It is to be seen that each small unit of villages is to be organised through the local Panchayat or Cooperative Society for purposes of conducting the campaign of increased food production.

In this connection, results obtained by the Adarsh Seva Sangha at its Village Centre Deori provide a striking illustration as to what results could be obtained on the basis of regional food self-sufficiency. Ten years back, in the year 1938-39, when this group of 7 villages was taken up for food production, its population was 1117, its aggregate production of food was 4019 mds. and it was short of food supply to the extent of 32%. By gradual stages through general education, persuasion, propaganda and provision of facilities food production of this area has increased from 4019 mds. to 10623 mds. in the present year registering an over-all increase of food supply by 137%. An area which was short of food supply to the extent of 32% has not only become self-sufficient in the course of these 10 years but it has also become a surplus area to the tune of 92%. On an average, increase in food production obtained at this unit of villages during these ten years works out at more than 13% per year.

Of course, it is not to be expected that this high percentage of increase obtained in a small area would hold true in the case of all-India. But it is not unlikely that with proper organisation on the basis of regional food self-sufficiency, food shortage of the country could be made up in the course of the next two years and this country will not have to beg for its food at the door of foreigners.

OPINIONS

I need hardly assure you that I am genuinely interested in anything which may be done to help solution of the food problem and increasing production. We are faced with a very serious situation which as you say requires concerted effort. I hope your conference will give a lead in the matter.

RAJENDRA PRASAD.

6-4-49.

Not only is food the major problem of the day but I have been interested, as you know, in rural reconstruction for very many years. Had I been able to accept your invitation nothing would have given me greater pleasure than visiting your Model Village Centre Deori.

K.N. KATJU,
Governor, West Bengal.

30-3-49.

We are a predominantly agricultural country. But paradoxically we are faced at present with a deficit in our food supplies and we have to depend on foreign countries for imports involving a very considerable expenditure. The drive for growing more food which has already been launched needs the fullest cooperation from agriculturists. Prices for the procurement of food have been fixed by Government at fair rates. We must increase the production of food grains by resorting to mechanised cultivation such as tractor ploughing, anti-erosion and soil conservancy measures, introduction of improved varieties of food-grains, control of insect pests, insurance and preservation of the grain produced, use of fertilisers, organic and inorganic manures, irrigation from rivers, tanks and canals, creation of economic holdings by preventing sub-division and fragmentation and the formation of cooperative farming societies. With the steady and increasing adoption of these measures, I hope, we shall be able to be self-sufficient in food supplies and thus save our funds for the much needed development of our country.

SIR MAHARAJ SINGH,
Governor of Bombay.

19-2-49.

I am glad after all you have been able to move the Government of India officials to take interest with proposed conference. Your results in "Grow More Food" are so very definite that the Method introduced by you in its achievements should open the eyes of the Government officials, and induce them to revise their policies and their methods of approach. These measures require concentrated efforts and active cooperation from the cultivators. The measures proposed also should be well thought out and must be such as to yield definite results. This is not the case with the usual Governmental activities.

In any case, I am glad, you are forcing the Government of India officials to face realities and I do hope and wish that the lessons they learn at Pohri would be more widely known and adopted.

SIR MANILAL B. NANAVATI,
President,
Indian Society of Agricultural Economics.

23-3-49.

SUGGESTIONS

(1) Food grains must get their proper price. Agriculturists have abandoned cultivation of food because it does not even pay the expenses of agriculture. With less labour and expense, money crops give better returns and they are systematically encouraged by Governments and industrialists because they form raw material for industries or are otherwise widely consumed.

(2) The system of assessment and procurement must change. Revenue must be collected in the form of specified cereals. The quantity must be fixed by weight and not by a share, which will vary in weight from year after year. Or alternatively, prices should be declared beforehand and revenue should be collected in the form of food at that price. That is to say, *e.g.*, if the price of a cereal is fixed at, say, Rs. 8/- a maund, a cultivator, who has to pay Rs. 8/- assessment, should be asked to hand over one maund of that grain.

(3) Every effort should be made to prevent large amount of water running away to the ocean.

(4) Mechanised cultivation and artificial fertilisers must be discouraged.

(5) Our ideas about the importance of money and industries must fundamentally change. If a country has plenty of food and plenty of water, it can never starve and if along with it the charkha is added, it can never remain beckward or unprosperous and subject to them all necessary industries could be developed. Development of industries at the cost of food, charkha, cattle and land manure is suicidal.

17-3-49.

K. G. MASHRUWALA,
Editor, 'Harijan'.

I congratulate the Convenors of the Conference for taking in hand the most burning question facing the country. I am glad our people are beginning to realize that first things come first, and nothing can be given a higher priority than the food-question. I hope, the Conference will finally decide that in our country it is the human machine which is wanting help and work, and so the 'Grow More Food' campaign should keep that in mind. Just now it is the fashion to hanker after large machines which are made in foreign countries and for which we have to depend on the goodwill of other countries. I would like to suggest that definitely the first step for food production campaign should be small help which the producers may demand to facilitate their work, like better seeds, tools and adequate water supply. For instance, if a small stream is to be bunded, that should be done immediately. The Conference should press on the Government the necessity to push through all the small schemes, as early as possible either through Government agencies or through well tried private agencies.

31-3-49.

GOSIBEN CAPTAIN,
President,
Village Industries Committee,
Bombay Province.

I feel so strongly that our Government is not adopting correct lines in solving the problem. I do not believe that tractors, extension of new cultivated areas, and the use of chemical fertilisers on a large scale is going to solve our long term problem. This is cashing our capital for immediate needs, and letting the devil take care of the future. That is why I said I am glad Pohri is the venue; Pohri will bring home to all, that steady work on what are known as the old methods, is the correct path. We only need organisation and efficiency.

19-3-49.

JABIR A. ALI,
Consultant & Adviser to Agricultural & Horticultural Estates,
Devnar, Chembur.

The food problem is not as bad as it seems. The Provincial Governments have not fallen into line with an all-India policy. The procurements have been half-hearted in the surplus provinces some of which did not introduce rationing and even in the deficit provinces, the procurements have been slow as well as limited and unfortunately, the price offered to the farmer has been very low. If there is any illustration wanted that autonomous provinces are an evil for the country, it is in the difficulties of food and exchange created during the last three years.

16-3-49.

MANU SUBEDAR.

But we know you will carry on well. We know you will have days of fellowship as you face one of the most serious problems of India.

May you be guided by Eternal Truth as you struggle with this fundamental need of mankind and especially of India! May you give a new lead and enthusiasm to us all!

10-4-49.

RALPH RICHARD KEITHAHN.

The subject you are tackling is of paramount importance to the country as a whole. After partition, fertile and large areas where considerable quantities of food grains were produced have been lost to us. It is, therefore, necessary that we should make every endeavour to intensify our efforts to produce more in the existing cultivated area and to bring under cultivation large areas of culturable land. In Mysore we are taking steps to induce the agriculturist to take to intensive cultivation in the area under occupation by him with manure, seeds and agricultural implements at concession rates.

It is proposed to organise Multi-purpose Cooperative Societies for every convenient group of 20 to 30 villages and through them distribute to the agriculturists their daily needs such as manure, seeds, agricultural implements, kerosene, cement, cloth, yarn and food grains. These Cooperative Societies will serve the present needs of the rural population. When once the agriculturist understands that his needs can be met by an institution which is his own, he is likely to take a live interest in its progress. He is thus made to take more initiative in his own betterment. Moreover the middleman who is likely to exploit the agriculturist is also eliminated.

The next question is the question of making the agriculturist more land-minded. Owing to various causes, the agriculturist is taking less interest in the cultivation of his land primarily because it does not yield him as much income as other occupations. We must endeavour to see that he gets back the same old interest which his ancestors used to take in land operations.

There is great scope for compost manure in the rural areas. It is now going to waste. If he is made to take live interest in conserving the village waste and using it for preparing his manure, a great task is done. The Government of Mysore have undertaken a regular drive in this direction. The Municipalities and big Village Panchayats are requested to take steps to prepare compost manure. The compost manure will be bought by Government and distributed to the agriculturists.

The other question is the question of seeds. We are having Demonstration Farms in some places where experiments are conducted in growing crops for seed purposes and distributing the seeds to the ryots.

Last but not least is the question of the draught cattle. Owing to continued neglect, the cultivator is at a great disadvantage in this respect. His poverty has stood in the way of his possessing proper draught cattle. The State must step in in some form or other and see that each cultivator with a minimum area of 5 acres possesses one pair atleast of fine draught cattle.

2-4-49.

T. MARIAPPA,
Home Minister,
Mysore Government.

1. An enquiry has to be made to ascertain the causes, the chief impediments or handicaps for increasing food production in different parts of the country with a view to rectify them or mitigate their negatory effects.

2. The Centre has to lay down the broad policy with regard to production, distribution and consumption of food, while the responsibility has to lie with the Provinces and States to carry out the policy laid down and to execute the plans of Food Production.

3. There is no use criticising solely the Central Government on the present food position in India. Since agriculture is a Provincial subject, the various Provinces, surplus or deficit ones, are to be asked to state the efforts they have made in recent years to increase production and procurement within their own Provinces to minimise their dependence on imports from abroad or from other Provinces, or alternatively to enhance their contribution of available surpluses of food grains to the deficit areas. Periodical statements reviewing the food situation on all aspects in India and in the Provinces have to be made at the beginning and at the end of each agricultural season instead of replying to questions put at the time of budget sessions till India becomes nearly self-sufficient in food. The items (2)

and (3), imply necessarily a closer coordination of the Centre and the Provinces as well as among different units themselves in the matter of food.

4. An increase in production of food involves increased irrigational facilities, increased supply of fertilizers, machinery, coal, iron, cement etc. needed to carry on effectively the food production projects. Above all transport (by rail, by boats or by roads) is an important item. Although all possible attempts may be made to facilitate imports of food and other accessories for food production for some time, however, greater stress has to be laid on fuller utilisation of indigenous and available resources and material within the region itself than undue reliance on imports from outside. The need for improvement in food statistics cannot be overemphasised.

5. The facilities given by the Government by way of distribution of improved seeds, manures, cement, etc., at concessional rates in connection with the 'Grow More Food' drive are found misused or not effectively used for the purpose for which they are given. In order to avoid wastages and check misapplication of the help given by the State, a system of "Controlled Government-aid for Food Production" has to be established to ensure necessary supervision in the way in which government help is utilised by the beneficiaries.

6. Ensuring a 'remunerative price' to the farmer, distribution of prizes or giving 'bonus' in case of procurement etc. constitute 'incentives' of material character. But what is hopelessly found lacking in the Government's food production drive is the necessary spiritual and psychological factors needed for an all round production especially in the country-side. Therefore, the necessary consciousness of the magnitude of the food crisis had to be instilled into the minds of the people by organising a well-directed "Grow More Food Movement" by the joint efforts of officials and social workers in every nook and corner of India.

7. *In this movement, every region, every village, nay, every farmer must be reckoned as a basic unit in the food production drive.* The farmer, the field labourer have to be exhorted in such a way, as each farmer and each village will be at least self-sufficient with regard to their food requirements, and, if possible, by all means surplus producers. 'Eat the Surplus' and 'Wear the Surplus' must be our slogans.

8. Hoarding and black-marketing in necessaries of life as food, cloth and housing must be severely dealt with and the names of such persons black-listed and due publicity given in all important places as markets, villages and in newspapers. In matters of this kind the dread of society is more effective than any laws meted out to punish the anti-social elements.

22-3-49.

DR. V. V. SAYANA,
School of Economics and Sociology,
University of Bombay.

Unless there is proper encouragement and inducement to the ryots for more production it is impossible to feed our country with the present increase of population. We have all the natural resources. We have land, men, and money. Although we have all the natural resources we are lacking in the will and the drive. Old methods in the treatment of ryots are still continuing although we have attained independence. Bribery and corruption are rampant owing to the inefficiency in the Provincial Governments.

Ryots are not supplied their requirements namely manures, seed, agricultural implements, cloth, kerosene and other essential articles, even though the controls are in force. The ryots have to purchase at black markets at very high rates all these articles. Hence there is no inducement for ryots to produce more. They must be given proper encouragement by supply of essential articles for agricultural purpose through cooperative associations.

The present method of production of food stuffs by individual efforts with profit motive is of no use in the present competitive world. There must be mass production by cooperative efforts. Land must be nationalised. Money in the cooperative banks must flow into the hands of agriculturists through organised cooperative institutions, for better farming and better business, and better living. Land, Labour and Money must be yoked through cooperative agencies for more production. This can be done only by state aid and with organised planning. Then only there will be inducement for more production to feed the millions of our mother land.

5-4-49.

N. SATYANARAYANA,
President,
The Alamuru Cooperative Land Mortgage Bank, Ltd.

It is a pity that with all the efforts in grow more food campaign our total yield has gone down though there has been added a new area in our cultivated area. I believe that food production or increase in yield requires the handling, guidance and assistance of the individual farmer and tackling of individual localities whose problems must vary from place to place. As long as our agricultural officers generalise, remedies sitting at a convenient place nothing will come out. Lectures, propaganda committees and commissions are not likely to help much in our object. We cannot afford to wait for big schemes which will take at least 10 years to show results. Even concentrating on composting, if at all successful, will not produce result as this will not and cannot be applied to food crops. I wish this truth be realised and each officer be given a target of production and he will be held responsible for the same.

Further I am of opinion that controls are responsible for destroying large quantities of grain – gram handling is the instance. Rationing of wheat and rice carries us nowhere. We should abolish control and rationing but move food grains

freely and promptly giving food the first priority and shortage will soon disappear. Whenever prices go very high government should bring them down by moving stocks of their own to be built from outside. This is a definite scheme though it will not appeal to the government. Shortage of rice and wheat must remain and increase as long as villagers are forced to eat coarse grains by procurement of wheat and rice. In scarcity we ought to have forced the population to take to other grains.

CHAUDHARI MUKHTAR SINGH,
Meerut.

23-3-49.

As a result of my experiences during the last four years, I am convinced that the introduction of the control and rationing is a serious mistake. Panditji put the food shortage at 10% while Sardarji put it at 7% and the actual figures given in the Parliament recently work out to 6%. In a vast country like this with crores of people and millions of unemployed and half employed persons it must be very easy to raise sufficient quantity of extra food stuffs to meet the deficiency. Even apart from extra production if proper care is taken in the processing of food stuffs this deficiency can easily be made up. The staple food in the country is rice and wheat. The experiments conducted both in my Ashram and at Nagpur and Wardha, have clearly demonstrated that the use of hand pounded or chakki rice will save at least 20% of food as compared with the use of highly polished rice both in quantity and in the nutrition provided therefrom. I have not conducted experiments as regards wheat but I am inclined to think that the use of hand ground flour atta in place of mill flour is likely to give some saving. Srijut Vinobaji placed the saving at 15% from the information supplied to him by one of the C. P. Ministers. We need not pause to consider whether fifteen or twenty percent is the correct figure. Any how it is more than six per cent shortage which occurred last year.

Therefore, it is the duty of Central and Provincial Governments to ban the mill processing of rice and wheat, to insist upon the methods of processing advocated by the A. I. V. I. A. Immediately these two things are done, there is no necessity for control or rationing or importation of food stuffs from abroad, which results in loss of twenty five or thirty crores of rupees every year from out of the slender resources of our poor country. The abolition of controls and rationing will certainly lead to the disbandment of an army of unnecessary officials whose maintenance, salaries and D.As., is itself costing crores of rupees. This abolition will also help the consumers in another way. Some of the poorer folk in the country who have been using millets for generations together are now under rationing drawn into the fashion of eating polished rice which is certainly less nutritious and causes vitamin deficiency diseases. These will then revert to millets.

In the Grow-more-food campaign special attention should be paid regarding the supply of seed and manure and provision of irrigation and drainage facilities. The last is altogether neglected and the kisan is deprived of fruits of his labour by

untimely rains and consequential floods and submersion of lands. Immediate steps must be taken for providing at least temporary drainage facilities.

This leads us to the question of supply of manure of the requisite quality and in sufficient quantity. My Ashram is situated in deltaic region. All around there is dry and wet cultivation and I personally know the difficulties which we are feeling and the ryots in the surrounding places are experiencing in getting adequate supplies. The best manure is farm yard manure. It is not available in sufficient quantities. The second best is the oil seed cake. Compost manures are not made here and the worst is the chemical manure. It affects the fertility of the soil as well as the nutrition in the food stuffs. On account of the manipulations of the control and decontrol of oil cakes, we are experiencing great hardships. I would suggest that the oil seeds, castor, ground-nut, til etc., should be kept in the country in sufficient quantity to meet the requirements of the kisan. And if necessary only the surplus should be exported outside. If these oil cakes are supplied in the proper season at reasonable prices one can guarantee at least 25% extra food production without any trouble whatsoever. But here too the vested interests are up against the kisan. And they must make the necessary sacrifices for the good of the country as a whole.

8-4-49. SITARAMA SHASTRI,
Vinayashram, Guntur, Via Ponur, Madras.

In my opinion sufficient attention has not been given to the prevention of pests of wild animals like Cheetah, Sambar and wild Pigs. In the villages where water is plentiful and the soil fertile 15 to 75% of what is grown is eaten by these and other beasts. To save the rest, night watch is to be kept. Shouting the whole night to scare them away, the cultivator should expose himself to rain and cold. The circumstances have a very bad effect on the health of the man. He cultivates only so much area as he can watch over. Hence fields lying at some distance are not cultivated at all. How much area can a man watch over and how much can he save from the pests are what govern the question of cultivation and not his man power to till, sow and harvest.

If the programme of keeping a watch is satisfactorily solved, more lands can come under cultivation and a fraction of what is now lost would be saved. I, therefore, suggest that all available areas for cultivation in villages of this description should be fenced with wire fencing. Herein there are two difficulties: firstly, we do not get the fencing. Secondly, the fencing to be effective should be round the entire village, at least round the entire cultivation area. We find that even though cultivators who own lands on the borders of the forests are willing to join in the scheme, those whose lands are in the central parts refuse to contribute. They refuse to be advised or pursuaded. Force is the only remedy to them. The Government should bring some act or legislation to compel them to contribute or should themselves fence the areas to be protected and recover the charges or the expenses in instalments along with the land revenue assessment.

The fencing can be made even in villages as a home industry if the raw material namely the iron wire is supplied by the Government. This should be attended to by the Government.

1-4-49. SANJEEVARAO KALLAPUR,
Secretary,
Village Industries Committee,
Dharwar.

RESOLUTIONS

(1) Need for New Approach and Honesty

Seeing that it is an acknowledged fact (1) that the approach of Government servants towards the cultivator is faulty and (2) that corruption is rampant in the Departments of Agriculture, Animal Husbandry, Forests and Irrigation, and that under these circumstances no plan or scheme, for improvement in land development, however well thought out and drawn up, can really be successful, this conference is emphatically of the opinion that an all out drive against departmental corruption, together with thorough overhauling, and readjustment of the administrative machinery of the above mentioned departments, must be taken in hand forthwith. At the same time, for introducing a sympathetic approach and new outlook on the part of Government servants towards the cultivators, a scheme should be drawn up by which Government employees in these departments should be sent for a period of training and experience to centres where national work is being carried on by experienced constructive workers, and to this end more such centres should be at once developed and every effort should be made to persuade national workers of high standing to take up their management and development.

(2) Need of Duel-Purpose Cattle

In view of the fact, first, that sound agriculture in India is dependent on good draught cattle and secondly, that prohibition of all slaughter of the cow and her progeny is rapidly coming into force which will mean that the useless male calves of certain dairy types of cattle, which have upto now been slaughtered, will become a dangerous burden on the already overstrained grazing and fodder supplies of the country, this conference is emphatically of the opinion that the Animal Husbandry Departments of all Provinces and States should henceforth concentrate solely on the breeding and development of the best duel-purpose type of cattle suitable to their own regions.

(3) Reconsideration of Modern Methods

In view of the fact that the West has already begun to discover that modern methods in agriculture, especially mechanised farming and artificial manures, are leading them into troubles such as erosion, "burning up" and blowing off the soil, shortage of humus and deterioration of vitality in both the vegetable and animal kingdoms, it is incumbent on India to make herself fully acquainted with this experience of the West, and to model her agricultural development on sound lines which will save the country from passing through the misfortunes in which the pioneer countries in "modern methods" of agriculture now find themselves involved.

This conference is of the opinion, therefore, that to this end a small committee of experienced and expert men should be formed to look into this problem and draw up a scheme which can be put into immediate action, which is quite feasible, as most of the *wise* methods in agriculture do not need a lot of heavy machinery or factory made materials, and can be taken in hand without any delay.

(4) Need of More Intensive Not More Extensive Cultivation

Seeing that countries like China who have for centuries been using composted manure without any "Artificials" obtain three to four times greater yield from the land than what we do in India, and seeing that within one year, by simply concentrating on compost, we could easily wipe out our deficit in food grains, now being imported from outside at huge expense to the Nation, this conference considers it essential that the Compost Drive, inaugurated at the First All-India Compost Conference in New Delhi, in December 1947, be further developed, much better staffed and much better financed, and that every effort be made to intensify the fertility of the lands already under cultivation, and to save the fast disappearing grass lands for the benefit of the cattle who are rapidly deteriorating for lack of the same.

(5) Dangers of Canal Irrigation

In view of the fact that very serious developments of water-logging and saline concentration on a large scale have appeared in the Punjab and United Provinces as a result of prolonged and extensive canal irrigation, this conference is of the opinion that a thorough investigation of the causes and the best means to avoid repetition of such disasters in all future canal irrigation schemes be undertaken.

4-4-49.

—MIRA BEHN
Pashulok (U.P.)

(1) That an Agriculture and Food Commission for India be constituted of 4 non-officials and 3 official members to :-

(a) tour immediately with a view to study the activities handled by different Provincial and State Union Governments in the matter of food production and distribution and study the present food statistics and plans with them.

After the above study tour, to be completed within a couple of months say by end of June, the Commission should propose an integrated food plan aiming at total food sufficiency by means of increased production before 1952 and aiming at increased production by 100% over the production in 1949 within 5 more years i. e. by 1957 and to suggest an effective food distribution machinery.

(2) That the food problem in India for 10 years to come will be such as to deserve greatest application of national energy and resources to utilize to the full its potentialities. In order to assure a well effective and coordinated work an Agriculture and Food Department for the whole of India should start functioning since it would be mainly by the development of Agriculture that the salvation from want be assured. All the Provincial and States Union Agriculture Departments should be placed under the Central Agriculture and Food Department for 10 years.

(3) That an All India Agriculture and Food Organisation enlisting the cooperation of both officials and non-official agencies be constituted. This organization with its ramifications all over and embracing all the villages in India will provide the missing links between the Government and primary food producers in the matter of food production and the Government and the consumer in the matter of food distribution.

(4) That all efforts be made to see that agriculture in India no more makes a subsistence farming and that the intelligentsia and those with good financial resources accept and develop agriculture as an industry. The Government be requested to fix up its policy to this end.

(5) That it is highly essential to utilize both intelligence and business tact of the educated masses and the practical experience of the vast number of uneducated agriculturists to ensure scientific and systematic development of agriculture in India. The subject of agriculture with all its problems in India should be predominating item in the educational system in all educational institutions of India.

(6) That a number of research educational and extension institutions for agriculture and food problems be started and all the servants of development departments and the public workers connected with these problems be imparted necessary knowledge and adequately trained for the work at different regional institutions.

—K. M. DESAI,
Dhrangadhra.

28-3-49.

(1) Resolved that there should be a tank-digging drive, particularly in Bengal, Madras, Bihar, Orissa and U. P., so as to increase the tank-irrigation capacity by one-third before the coming monsoon.

(2) Resolved that the provincial governments should take steps including legal compulsion to secure under the cereals at least the maximum area reached during 1939-47.

(3) Resolved that the Indian National Congress should undertake an intensive drive to approach, exhort and appeal to the cultivator to release his grains to the utmost for purchase by the government.

(4) Resolved that the provincial governments should vigorously intensify their efforts to impart cooperative education to the adults through lectures, talks, pamphlets, discussion groups and organise cooperative stores for undertaking *inter alia* food distribution function.

—MAHESH CHAND,
Lecturer in Economics,
Allahabad University,

19-3-1949.

(1) In view of the fact that large areas of ravine lands, which can be developed and cultivated to plantation and field crops are lying waste on the banks of many Indian rivers, this conference recommends to Government of India to take immediate steps to make a survey of all such areas and to give them over to prospective cultivators free of cost and free of assessment for ten years on condition that such lands be brought under the plough or planted to trees as soon as possible.

(2) This conference recommends to the Government of India that wherever possible and available, natural water be allowed to be utilised by cultivators for agricultural purposes free of charge or tax.

(3) In order to intensify the production of food, both to meet our immediate as well as our permanent requirements, this conference recommends to Government of India that the successful introduction of new varieties of agricultural and horticultural food crops be encouraged in areas where such varieties are not grown at present, by means of awarding suitable bounties, prizes and medals etc. to those responsible for such introductions.

16-3-49

—S. S. BHAT,
Baroda



Venue where the All-India Food Production Conference was invited.

THE INDIAN FOOD PROBLEM

By: Dr. C. N. Acharya

AT the present time so much attention is concentrated on the working of the Grow More Food Campaign—its successes and its failures—that the public is apt to ignore consideration of the more primary issue, as to whether the present food difficulty in its practical aspect is really due so much to an over-all deficiency of food production in the country or to a failure in procuring the food requirements of the urban population from the villages. Sardar Vallabhbhai Patel in one of his recent speeches delivered during his South Indian tour mentioned that he felt that there was enough food in the country, but the difficulty was in making it go round to all the people and this indicated the extent of our "moral degradation."

About 100-120 million population living in our towns and cities are being fed under our rationing system, at an average rate of 12 oz. food grains per adult per day. In the whole of the Indian Union area, it is estimated that about 45 million tons of foodgrains are produced and at the above rate of 12 oz. food grains per adult per day, our total food-grain production should be sufficient for about 360 million adults. Our population in the Indian Union area was estimated at 319 millions in the 1941 census and allowing for 10% increase, it may be about 350 millions at present. This includes children below 10 years of age whose food requirements are bound to be less than those of adults.

It would therefore appear that the main problem which has accentuated the food difficulty during the last few years is one of procurement and not so much of deficiency. The normal trade channels which served procurement and distribution purposes during the previous years, broke down in 1942 due to the introduction of 'black market' and due to what Sardar Patel declared as the "moral degradation" of our business interests; and inevitably Government had to step in with their alternative system of "rationing". But the experience of the last few years has shown that Government have not been able to procure sufficient grain from the villages, (as against the competition of the black marketeers) and have been put to the necessity of importing food in large quantities from outside India, leading to considerable loss in valuable currency assets. Mere emphasis on the Grow More Food Campaign would not be able to solve our food problem, since on account of our rapidly increasing population, food production in this country is likely to keep just abreast of the growing population, even at a sub-nutritional level. It is not possible to get such sufficient excess production in a short time (say 20 million tons) so as to defeat the mal-practices of the black marketeer. The only solution would appear to lie in a radical alteration of the procurement system, so as to make the village units responsible for producing and handing over fixed quotas, representing their excess production, to Government for feeding the urban population.

The village units naturally would not be tempted to undertake these responsibilities if they simultaneously do not stand to get definite advantages from Government in return and if they are not made

REVISE DEFECTIVE PROCUREMENT POLICY

By: R. K. Sidhva

I am covinced that excepting the areas covered by famine, rut, and acts of God, like Floods, absence of rain, there is enough food in the country. The policy of procurement is very defective. Imagine the following figures and everyone will be convinced that there is something wrong somewhere, nobody has thought fit to hit at it so as to bring about more food from the cultivated areas into the open markets. During the year 1948 BIHAR procured only 2.6 per cent, U. P. 4.8%, ORISSA 6.4%, BOMBAY 6.5%, C. P. 8.7%, BENGAL 14.9%, ASSAM 15%, MADRAS 28.8%. With such a meagre percentage of procurement there is every likelihood of shortage of food.

What is the basic quota fixed by the Central Government for the Provincial Governments is not known. There is no immediate short-term policy. If it is anywhere then the correct statistics are not available. How many new wells have been sunk, what virgin soil has been brought under cultivation, what was the additional quantity of crops due to additional land under cultivation are the figures required to be studied at a glance are not available. And when they are made available they are given in such a muddled state that confusion is caused and the real issue is missed.

For the long term, Government of India and some Provincial Governments have big irrigation works under contemplation or sanctioned. When they are completed they would decidedly add to the growth of more food in the country. When that period comes, country will be in a position to export its surplus stock of food grains to other countries. But for immediate purpose, there should be in each province a scientifically laid out plan for correct statistics of additional land brought under cultivation every season, quantity of food grown in that area, number of wells sunk over and above the correct figures of quantity of crops from the existing cultivable lands together with a comparative statement of figures for the last two years. At present money in this direction is wasted and where statistics are available they are challenged by economists.

A large number of tractors and mechanically propelled ploughs are working in some provinces. Half of the areas under such cultivation should be turned into Commercial Estate Farms to be run by the State. This system would give some relief over the defective procurement system. If these areas are supervised by technical staff, they would serve as training centres for the cultivators; it would bring more yield per acre; and will also be a good source of supply of improved seeds which are in great need. Half of the culturable lands are to be given to recognised and well laidout Co-operative Societies. Promoters of such societies would be an additional help to the State and the people in their procurement and grow more food policy. Last year our country imported from foreign countries food grains to the extent of 3 million tons at a cost of 150 crores of rupees, resulting in a net loss to State of 30 crores, to meet the difference between purchase price

and selling price. Year previous to the last we imported grain worth 100 crores; it will thus be seen that within a period of one year we had to import food grain 50 per cent more. If steps are not taken in the right direction and as suggested above, I would not be surprised if our import stocks in 1949 exceed by another 50 per cent which would mean a loss of 45 crores of rupees.

I suggested in the last Assembly session during the discussion on Food an alternative food in place of rice. The Minister in charge pooh poohed my idea. It is good to pooh-pooh but he had no other alternative to suggest to replace rice which was not available in deficit areas. I am further convinced that if a datum-line is not fixed for the stoppage of import of foreign food grain, we will lead ourselves in such a serious mess that it will be difficult to get out of it.

In my opinion we should for a short period say of two years not import food grains worth in terms of rupees of more than ten crores to satisfy the famine and needy areas. If properly distributed these ten crores of crops ought not to lead us to a loss of more than a few lacs, if at all a loss is to be borne. To-day in its zeal to import more food, Government give very little consideration to the quality and quantity of imported food grains. We are cheated in weight by one percent according to Government's admission but 2½% according to my estimate. Nation is given a quality which is at times detrimental to health. All these can only be stopped. If imports are stopped and a little war-like measure, vigour, enthusiasm and push are introduced in the deal of procuring more food from our own country, I am confident we would not only be saving a good sum of nation's wealth, but will be able to supply that rich quality of food grain which our country produces to feed its population and to keep them in good health.

INCREASING FOOD PRODUCTION THROUGH THE SUPPLY OF MANURES

By: Jabir A. Ali

IT is evident that both the Government and the people are now sufficiently perturbed by the food situation in the country. Much thought and money have been spent in finding solutions. On a question of such outstanding importance, and one that is complicated in many directions, it is not surprising that there is so much diversity of opinions. Yet I feel that could we brush aside the innumerable secondary issues and look at the problem in its nakedness, the plan to adopt becomes fairly clear.

The problem, I take it, is to increase our grain production by 5 million tons per year, immediately. This means an increase of about 7% on our present production. Evidently the task is neither superhuman nor impossible. The task becomes difficult because of the departmentalisation of our administration.

The position is now so critical that desperate measures have become necessary and we cannot allow this departmentalisation to baulk the attainment of our goal, or to make it unnecessarily difficult.

to feel the consciousness of being responsible units of all India State, with definite privileges and responsibilities attached to each unit.

I would suggest that the Panchayat Raj system on lines similar to that now functioning in the United Provinces should be introduced into all the Provinces and State Unions and the scope of the above Act should be broadened so as to lay more emphasis on the duties of Gram Sabhas in preparing and executing a 3 or 5 year plan for the agricultural, industrial and social development of the village units. These plans, after due scrutiny by Government, would be executed by the Gram Sabhas with the technical help, materials and funds of the Government. In return for the above technical help and funds, the Gram Sabhas would agree to hand over to Government definite quotas of their foodgrains, as fixed from year to year under the agricultural development plan of the Gram Sabhas. Unless the Gram Sabha delivers its quota of foodgrains at the end of the year, it would not normally get its development grant for the succeeding year.

For the above purpose, it would be convenient to divide the 5 lakh villages in India into 100,000 units, each unit consisting of 5 adjoining villages. We are at present spending Rs. 150 crores for import of about 50 lakh tons of foodgrains. If we can spend the above sum among our one lakh units of villages, each unit will on the average get Rs. 15,000/- per year and its duty would be to produce and hand over to Government an extra 50 tons of foodgrains per year. The average production of foodgrains at present per unit is (45 million tons divided by 1 lakh units i. e.) 450 tons and it would be easy for the unit, without the help of any machinery or fertilizers, but purely by utilization of local resources by way of increased manure production, repair to wells etc, to produce the extra 50 tons of foodgrains per unit.

The above outline gives only the principles on which the new Scheme of extra foodgrain production in the villages and foodgrain procurement by Government for the urban population should be based. The detailed plan for each Province and State should be worked out in the light of local conditions in each area.

It is claimed that on the above basis a permanent solution can be found for the food problem of the country, which would not involve the need for import of foodstuffs from abroad. It will build up simultaneously a sound local economy in the villages which could generate enough cooperation and enthusiasm in them to raise production to a level of nearly 100 million tons per year, sufficient to feed more than double the existing population of the country.

PRACTICAL STEPS TO MAKE FOOD PRODUCTION DRIVE A SUCCESS

By: G. Jogiraju

THE primary unit for the organisation of the food production drive will be a single village or a small group of adjoining villages with a population of not less than 2000 or so.

2. Each village or group will be allotted a minimum quota of production in respect of the main necessities of life, especially food grains, according to the area which can be devoted to the different crops under a proper rotation and the productive capacity of the land under average conditions obtaining locally.

3. The village panchayat or the working committee of a Gramabhivriddhi Sangham if there be any functioning already, or to be organised on a non-party basis, will be made to undertake the necessary propaganda about the need of stepping up production, and suitably divide the quota allotted to the village or group amongst individual holdings. It will also help the cultivators with advice about improved methods of production, and watch the progress of their efforts, with the cooperation of the staff of the Agricultural Department which has to be strengthened in the lower actual working grades.

4. A multi-purpose cooperative society organised for about five or six village units will be made to purchase the surplus produce from the individual cultivators, store the quantities necessary for distribution amongst the non-agricultural population of the units it serves, and pass on the rest to any other society in the taluq, district or province where it may be wanted. Any deficit products will similarly be obtained by the society from other societies and distributed along with the local products. The society will of course also attend to the supply of improved seed, concentrated manures, and other requirements of the cultivators and also cater to their financial requirements by way of short or long term loans.

The above are the main features of the organisation for the intensive food production drive I have in view. In the present state of our villages, there may be a dearth of panchayatdars, or members of the working committees of gramabhivriddhi Sanghams who are capable of or take adequate interest in to make the scheme a thorough success, but they may be trained and induced to do the work satisfactorily in the course of an year or two if the officers of the Revenue, Agriculture and other departments on the one hand and members of the Congress and other public organisations on the other cooperate and make a sincere effort.

Food production and its needs must be given the highest priority. I would say a priority above even the transport of food grain or its purchase. If we have to tighten our belts for the purpose, let us do it for a few months, if that enables us to get out of this continuous shortage and enormous payments abroad.

How can we reach our goal in the shortest possible time? In a country where no manures or fertilisers have been used for growing grain crops, these ages, even a half dose of manure would enable our fields to produce at least 10% more than at present. The addition of three bags of G. N. oilcake per acre of our paddy fields has shown what results can be achieved. Why are we not following this simple plan? Our manure supply is at present wholly unorganised, and has besides to pass the transport bottle-neck. During last year hundreds of thousand of tons of oilcake have remained stored in mills and godowns when cultivators were crying for it. Near Bombay hundreds of thousands of tons of cattle dung have been heaped round the stables, again for want of transport. If our organisation for collecting, composting and utilising animal dung were at all efficient, we could even allow animals to eat the oilcake, and then give us the dung for manuring. Millions of tons of cattle dung and other organic matter is lying all over the country and going to waste.

Having organised our manure collection and distribution, the next hurdle is transport. Where are the wagons? I am not at all satisfied that wagons today are being used only for urgent needs. Much wastage now existent can and should be avoided. If need be let us cut off all luxury transport, and devote our rolling stock to the most essential needs. I know that there is a control of railway priorities. I was a member of our regional committee and have seen its working. I know that inspite of this committee, wagons continue to be obtained by traders and merchants by mysterious means, and the committee is unable either to help or prevent.

In a nutshell, the problem of increasing production of food is one of organising collection and distribution of manures and of obtaining the necessary wagons for transport. In regard to the first, it is only a question of efficient organisation. In regard to the second, it is a question of the priority given to the movement of manures. This is so important that I would suggest even reduction of food grain movement to be able to make manure available to cultivators. I would buy less grain from abroad and take fertilisers instead if possible, and thus increase the home production.

An addition of 2½ cwts. ammonium sulphate and 1 cwt. superphosphate means an increase of 25% in yield.

If my experience and my observations are taken as approximately correct, what is the method of reaching our goal? Undoubtedly this sectionalisation of the problem will not allow us to go far. I would suggest the appointment of a food commissioner on the lines of our famine commissioners, with wide powers to command the help of all departments, to appropriating wagons for his objective, dollar exchange, and shipping space for achieving his ends. Only an autocrat of this kind can lead us to our goal, and I feel certain that a proper man with sufficient powers can achieve the desired result.

A final consideration on the subject is :- have we or can we get sufficient manures and fertilisers for our objective? Dr. C. N. Acharya, writing in Rural India of September 1948, opines that sufficient organic manure can be collected and composted in India to add 10 or 12 million tons to our present grain production. I therefore take it that even without importing extra fertilisers from abroad, we can achieve our object by mobilising and organising our manure resources and our transport. It is calculated that in Europe 25% to 50% has been added to grain production, through proper manuring. It is therefore not by any means too much to expect that where we have been using no manures, their addition, even if not efficient, will give us a minimum of 10% increase in our yield.

OUR FOOD PROBLEM

By : J. C. Kumarappa

FOOD has always been a problem in our country. There never was a time within living memory when everybody had enough to eat and there have always been devastating famines periodically. In such a land of ours we are now facing a phenomenon which is new. The shortage of food in former years was largely due to circumstances over which we had no control but the present phenomenon is one which we have brought on ourselves and we are unable to get rid of because of our incapacity to think without being influenced by vested interests. The problem is not one which is impossible of solution nor is it inevitable. Therefore, it is all the more curious that it should persist over a period of years when various other countries are fast making up the damage done by the last war. It would appear that the will to face the situation is lacking at a high level and the desire to meet the situation is not to be found on the departmental level. If these were there, at the most the problem would have troubled us for a period of months and not baffled us over years.

The situation should be tackled on three fronts—The land, the human element, and the Government. In dealing with these we have to take a short term course because food is needed here and now, but such short term treatment should be consistent with our long term plans and it should not be improvident, so that when the immediate needs have been fulfilled, we are not left with a whole lot of back-wash to clear up. While we are tackling the immediate problem we should also be working towards the solution of our long term needs.

Land

The management of land has many phases to it. Our country has been under cultivation for centuries. Hence we are at a stage where we cannot unduly stimulate the land to produce much above its recuperative power. In new countries like America in an emergency they can use artificial fertilisers to get bigger yields. Though the products may not be wholesome yet it would keep the wolf from the door and as the land gets exhausted they can move on to pastures new. But as we are not in this position, we have to take into consideration the proper maintenance of the fertility of the soil on farmyard manures and compost taking good care that needed humus is

there. The difficulty in providing this is the problem of fuel which again is linked up with our old imperialistic forest policy. The forest policy was dictated by the needs of revenue of a top-heavy administration. We have not yet changed the old policies. We are merely carrying on. Of course, change of forest policy to enable the villagers to obtain fuel and manure from these reserves would take time, but what is sad is that no attempt is yet being made to change this state of affairs. Even the land under cultivation is not being properly protected from erosion and no help is being given to the villagers to attend to minor protective works, with the result that a good many fields are getting out of satisfactory cultivation.

Irrigation is being planned with gigantic schemes of multi-purpose river controls. It is a question whether the finances of our country would ever allow these to be realised. What is needed at the moment is not the promise of a land flowing with milk and honey in some distant dim future, but a certainty of a quantity of water needed to ensure the harvesting of our crops. This can be done by small dams across streams and rivulets, by deepening wells, and dredging tanks.

Instead of this immediate programme, in many places where electricity is available, pumps have been installed with the result that the few rich people who have these pumps have been given the monopoly of all the sub-soil water available. The poor cultivators whose resources will not let them go in for these electric motors and who are dependent purely on the capacity of their wells and tanks have been left high and dry. As the water table sank with the pumping up of the water their wells and tanks have dried up. Their trees had withered away as the roots could not reach the depth to which the water had been pumped out, with the result the dry land, without tree and shrubs, gets eroded every time there is a shower. Instead of these our effort must be not to fall back on sub-soil water that gets exhausted, but to increase the store of water that comes down during the rains by small dams and other earthwork.

Even the area under cultivation has been mismanaged. The vested interests have prevailed upon the authorities to increase the land under commercial crops which have been often palmed off under the guise of food crops, for instance, sugarcane and groundnut for mills. Of course, Virginia tobacco cannot by any means be called a food crop but it assumes the proportion of a necessity with the plea for foreign exchange. Foreign exchange is not a matter in which villagers' need be interested but the cultivation of the land which affects them vitally is diverted to other purposes.

The sugar needs of our country can be, to some extent, made from date, palmyra and other palms which grow on lands on which nothing else will grow. If we can get part of our sugar needs from these palms hundreds of thousands of acres will be released for the much needed food crops.

Similar is the case with groundnuts. In the last financial year 1947-48 for which figures are available over 21 lakhs acres of land have been used for growing groundnuts for 'Vanaspati' mills. This extent of land could well feed over 10½ lakhs of families. Now these families will have to get their food imported. The service that 'Vanaspati' mills render is of extreme doubtful value. As a matter of fact all the oil that is necessary can also

be crushed by bullock-driven 'kolhus.' Any government that has the interests of the people at heart would have immediately banned the use of land for purposes which would deprive the people of food.

Apart from the restriction of land due to raw materials for mills, even the food that is produced is not being utilised to the best advantage by proper processing. It is nearly 10 years since the Government of Travancore realised the evil effects of rice mills which provided polished rice and lowered the nutritive value of food considerably. Yet our present Government has not seen its way to follow suit. The food shortage is said to be only about 10 per cent. This can be met largely by the Government controlling food-processing in such a way as to retain the full nutritive values and banning any methods which destroy food values. Combined with this should be a programme of storage which is also a problem and which leads to a high percentage of destruction of food by rats and other pests. These two methods of proper processing and storage in themselves should more than make up our deficiency.

Apart from the utilisation of land encouragement of cattle-breeding and dairying will provide sufficient nutrition of a type much needed in a vegetarian country like ours. Here also there is much scope for a long term policy combined with a short term treatment. The amount of destruction of good cattle that is being carried on in all big cities is a reflection on our food policy. The short term programme of cross-breeding Indian cows with foreign bulls has damaged our milk supply as well as our draft animals. The country needs a definite programme on this line also; not only to produce cattle, but also to protect and preserve them.

The Human Factor

The man who cultivates is truly a wealth producer and yet the majority of them hardly possess any definite interest in the production of the land on which they work. Absentee landlords of various types have been parasites on the productivity of farmers. Similarly the growing needs of our military has made a great inroad on our food supply. Our cities and towns are teeming with middlemen who eat up the provision of the farmers. A well organised system of distribution of the production is needed to curtail the number of middlemen all along the line.

We mentioned the military. A great many of the recruits come from rural areas. Insofar as they abandon their villages where probably they would have been employed in some productive occupation, we have drawn man-power from production into pure consumption or even destruction. In this regard it may be pointed out that the military can also help in the food problem by attempting to render some service on the productive side. The military could be camped in the outskirts of districts in areas which have not been brought under the plough. The engineering corps can practice on the bull-dozers and tractors to bring cultivable waste under the plough. A certain amount of the time of the military, especially during agricultural seasons, may be well utilised in raising such of their food needs as they can with their own effort. This will have many advantages. The young men who have left the farms would be introduced to up-to-date agricultural practices and

trained in making manures and attending to production of selected seeds.

Incidentally camping the military on the outskirts will also relieve to a certain extent the housing problem, as the present cantonment houses will become available for the civilian population.

The method of fixing of agricultural prices is not calculated to place before the agricultural community sufficient incentive to take the occupation of land as a vocation. Price fixing should be based on a proper study of costs to the producer. These costs must be directly determined and not indirectly estimated through the medium of industrial prices. Natural fixing of prices in this manner will tend to increase the return that the farmer gets and this in its turn will provide the attraction to those who seek employment in towns and cities at the present time.

Government of the State

We have so far discussed our approach to land and the farmers. The third party is no less important and that is the State. It would appear that we have inherited the legacy of the outlook of an imperialistic Government which cared more for the revenue they got than the welfare of the people.

The importance of agriculture demands that the Prime Minister himself should be a cultivator and take up the portfolio of agriculture. It is an occupation in which the largest percentage of our population is engaged and which is of vital importance to every citizen. Besides, the requirements of agricultural prosperity depends on so many factors which are dealt with by the multifarious departments of Government. To coordinate these it will be necessary that the person carrying this portfolio should have a voice that will prevail in the cabinet. As things are today, it is difficult to notice any definite policy of the Government in regard to agriculture. We appear to be drifting from one exigency to another. It is a series of patchworks without any underlying unity.

There is a great need to separate the different types of interests that claim the use of land. At any rate the use of land for food should be separated from the utility of soil for purposes of raising raw materials for mills. At the present time all available resources are being practically concentrated for researches by the Agricultural Department relating to mill raw materials. It would appear that it will help matters if we separated the departments of agriculture and exploitation of land, making the land exploitation department depend purely on the use of such lands as would be in surplus after the needs of the people have been met.

In this connection we may suggest that the plan for agricultural utilisation of the land may be based on an effort to produce all that the local people require for a balanced diet. This will necessitate the control of the use of land for various crops and a very close supervision and management in regard to crop-planning. Unless this is undertaken it will be almost impossible to guarantee the production of all the food we need. Of course crop-planning can also be regulated through finance by giving subsidies or levying heavy taxes. The Government can consciously regulate the activity of the farmers.

Maintenance of the land in a high degree of fertility is a matter in which the

nment has a definite function to perform. We have already referred to the place of artificial fertilisers and the need for an intelligent forest policy. The tendency at present prevailing of looking to Western countries for improvement of our agricultural practices may lead us into grave danger. If we must look outside our land for suggestions, the most logical direction in which we may turn would be towards our neighbour, China. Chinese productivity is more than double of ours and therefore if we can even learn a little of their agricultural practices we ought to more than meet our food shortage.

Conclusion

Our rapid survey, therefore, leads us to believe that the problem before us is not as baffling as our neglect would make it appear. If we have the will to look at the problem straight and tackle it firmly it ought not to be a problem for longer than one season. What makes the situation into a problem that endures is the fact that we wish to have the cake and eat too. If the alternative is to banish 'Vanaspati 'mills,rice mills and sugar mills,have we the courage necessary to take up such a programme? If the alternative is to give up Foreign Exchange and cultivate food for ourselves, are we prepared to face that situation? If we have to concentrate our efforts on works that may not attract world attention that would not need the biggest dam in the world, that would not be a wonder of the world,are we prepared to work away on great many details that will ultimately produce the required results? If we are not prepared for these measures any number of conferences and statements and speeches will lead us nowhere. The way is clear and open. All that seems to be lacking is the will to take to it. If the needed will and the strength is forthcoming, India need not import hundreds of crores worth food year after year. We may almost say this is the first hurdle that the country has to cross after obtaining independence. Shall we prove worthy or shall we be found wanting?

OUR FOOD PROBLEM WITH SPECIAL REFERENCE TO THE GROW MORE FOOD CAMPAIGN

By : Dr. V. V. Sayanna

'SELF sufficiency in food and other necessaries of life' is a sound concept. It is indeed a most desirable goal, in and of itself, to be aimed at by any nation in times of war or peace. But mere declaration is not planning; planning is not its proper execution ; and execution of a plan may not yield the expected results. This, in brief, is the crux of our food problem. It is repeatedly said that we have to increase production, put an end to imports from abroad, and be self-sufficient with regard to our food needs. Every year targets are fixed or revised, plans are prepared and operated in various provinces and units, and conferences are held in Delhi. And yet, the people and perhaps the Government too, are no less distressed to find that there are no signs of improvement in India's food position. On the contrary, there appears to be a marked deterioration at

have created additional difficulties for the Indian Union since 1947. While difficulties exist regarding internal movement of food grains and the things necessary for increasing production, foreign supplies from Burma and other South Eastern countries were rendered precarious due to the political disturbances. In fact, according to the survey of World Economic Affairs prepared by the U. N. Department of Economic Affairs (January, 1949), the production of Asia decreased from the prewar level of 96.88 million metric tons to 93.38 million metric tons. Production also slightly declined in Europe from 708 to 647 million metric tons, while the production increased in South America from 1.17 to 2. 11 million metric tons. World exports of rice, which during the five pre-war years (1934–38) exceeded 9 million metric tons annually, stood only at 2.2 millions in 1947 and were expected to reach 3.6 millions in 1948 due to larger sales by countries like Siam and Indo-China. This rice shortage has a serious effect on the food economy of the world as a whole.

Out of the various measures [1] enforced in India to meet the food situation in the country, the Grow More Food Campaign, which was subjected to much criticism in the recent debate, deserves special study. It must be remembered that the so-called 'Grow More Food' Campaign was planned and initiated by the predecessor Government at the Centre and in the Provinces from 1943 to 1946. The present popular regime may be held responsible only for the new five year plans which were carried out from the year 1947–48. The Government of India fixed a target early 1947 [illegible] up production of 4 million tons of [illegible] by 1952 on the basis of the existing [illegible] deficit. The target was then split up [illegible] provincial targets were fixed according [illegible] the resources of each of the provinces [illegible] the light of which the five year 'Grow More Food' plans were drawn up by the provincial governments. It does not appear that the provincial plans could achieve more than 50% of the targets fixed for the year 1947.

A number of measures are adopted to stimulate the 'Food Production Drive'. Subsidies are given for digging wells or repair of old wells and tanks to extend irrigation. Improved seeds and manures are supplied at concessional rates and subsidies are also given to encourage compost making by municipalities and local bodies for the preservation and use of compost as manure. In order to restrict the expansion of the area under non-food crops and to encourage the growth of food crops in the province, the Growth of Food Crops Act was passed in May 1944 by the Bombay Government. The Act under sections 3 and 4 provides for regulation of farming under different crop acreages—all the crops grown having been classified into scheduled food-crops and non-scheduled food-crops. The first includes the important cereals of rice, wheat, jowar, bajri and maize as well as minor cereals like ragi, kodra, bavto, vari, pulses etc. The major non-food crops are cotton and tobacco; and however, sugarcane, groundnut and vegetables are excluded from both the schedules. Those farmers who are found to have fully followed the provisions of the Act, were given a special land revenue remission of 0-2-0 in a rupee. Recently prizes are awarded to individual villages or farmers who have shown highest yields per acre. Procurement prices are fixed much in advance and the Madras Government have given effect to a bonus scheme to encourage both production and procurement in the province.

On the whole, the Government's 'Grow More Food' Campaign does not appear to have produced remarkable results which have disappointed popular expectation and even created resentment as reflected in the speeches delivered on the question in the Indian Parliament. There is no doubt that an impression or a belief has gained ground in the minds of the people, that the 'Grow More Food' Campaign carried on in the past 2 years represents the sheet anchor of the Government's policy to increase production and to make India self-sufficient in food. It may, therefore, both astonish and confuse the 'Common man' to learn at this time from the India's Food Minister that the target of the Grow More Food drive is by itself very small, as small as 0.9 million tons when compared to the India's food deficit of about 4 million tons (which may range even from 4 to 6 million tons) and they have produced nearly 0.7 million tons at a cost of about Rs. 5 crores and the much publicised Campaign is a mere drop in the ocean of India's 'Food needs' or in the total area under cultivation.

That there are great difficulties under which both the Ministries and the Campaign have laboured cannot be denied. There are difficulties of all sorts, of a local, national and international character, some of which are already referred to. The common difficulties everywhere seem to be short supplies of requisites to expand irrigational water and production such as steel, cement, coal, machinery and fertilisers, together with the transport difficulties and lack of adequate cooperation and coordination among the various departments of the Government, if not between the Centre and the Provinces. Investigations made in the Provinces of Bombay and Madras reveal that inspite of the 'Production drive', there was a reduction in the output of crops per acre and a contraction in the total area cultivated in recent years. Although the rapid expansion of the area under commercial crops has been retarded, it is not followed by a corresponding increase in the area under food-crops. It is reported that the Conference held in Delhi on 8th September 1948 appointed a Committee on food production consisting of the Ministers and Agricultural Officials of the main surplus and deficit areas "to deal with the next season's plan for increased production, the impediments to such production and the measures necessary to remove them", but unfortunately no details were known to the public so far as to the findings of the Committee and their recommendations.

The experts of the Joint Working Party of the F. A. O. and the E. C. A. F. E. which toured India and other countries of the E. C. A. F. E. region recently and which surveyed the agricultural problems of the Far East with a view "to determine the agricultural requisites of the Governments in the E. C. A. F. E. region, to advise the Governments on the action that can be taken to meet these requirements from indigenous sources, to explore conditions for joint action by Governments in the region for raising food production and, lastly to analyse the national plans of these Governments for determining

1. See for a detailed discussion my paper on 'Our Food and Agricultural policy', vide the Annual Number of the Business Week, Madras, February, 1949. In fact this article, in many ways may be deemed as complementary to the one mentioned above.

present due to famine conditions prevalent in some parts of Gujarat, Saurashtra and Kutch and also in parts of Jodhpur and Ajmer-Merwara.

We have to import in the current year about 4 million tons of food grains from outside costing about Rs. 150 crores as against 3 million tons imported at a cost of Rs. 100 crores in the previous year in order to secure a ration of about 16 ozs. and 12 ozs. a day per head in the rural and in the urban rationed areas respectively. The purchases would be made at rates obtained from time to time and spread over the entire year. There are also grounds to fear that the level of imports might very well reach the figure of 6 million tons before the end of the year 1949. It may be noted that a provisional allotment of 17.81 lakhs tons consisting of 4,81,000 tons of rice, 12,00,000 tons of wheat and 100,000 tons of coarse grains from various sources was already made to India by the International Food Committee for the period January to June 1949. Immense difficulties for payment of these imports from dollar areas and from rice exporting countries of South Asia, which recently seem to insist payments for their exports also in dollars, have to be faced and in fact owing to heavy purchases of cereals and capital equipment from abroad in face of her declined exports, India has been facing in recent years particularly during the last 6 months an import balance for the traditional export surplus.

Apparently, there must be something wrong some where! Inefficiency, apathy, wastages or all the three in the line of production, distribution and consumption of our food, or alternatively in the Food and Agricultural policies pursued by the Governments, at the Centre and in the Provinces. Of course, it is not possible to make a detailed examination of these problems in a short space. An attempt is made to indicate here only the broader outlines of some of these aspects emphasising especially the questions connected with the 'Grow More Food' Campaign The recent 'Food Debate' in the Dominion Parliament has brought into clearer light the existing state of things with regard to our food, the defects or handicaps of the much advertised 'Production drive' and called for an effective and concerted action on an emergency level by a more commanding personality vested with greater powers for a proper coordination of the work of the various departments concerned. Perhaps, of all post-war problems, food has occupied the first place in point of urgency and a relief of food situation will involve generally the reorganisation of Indian agriculture which in turn will shape the future outlines of her agricultural policy.

The nature of the food problem is of two kinds. The first relates to want of food inspite of the availability of abundant supplies because of lack of money or lack of purchasing power, while the second relates to the distress consequent upon short supplies and the several problems arising out of such a situation. The first type of the problem is in fact a permanent phenomenon in India as elsewhere, particularly in the countries of Asia and in the colonies, which continue to persist and exist as long as there are unemployment, exploitation and poverty in the world. As it is commonly understood, the food problem which India has been facing during the last 6 or 7 years may be said to be of the second type, or more precisely, the first is transformed into something more acute and complex on

account of the heavy impingement of the second owing to conditions created during war and in its wake. It is observed that India, although a predominently agricultural country, has been never found to be self-sufficient in regard to her food requirements. For example, in the pre-war years she was both an exporter and importer of rice, leaving an annual net import requirements of about 17 lakhs of tons. The food needs of India on the basis of rationed per capita of 16 ozs. and 12 ozs. per day for the rural and urban people, as estimated by the Food Grains Policy Committee, are 44.4 million tons as against her total production of 39.9 million tons,* thus leaving a gap of about 4.5 million tons. This gap between production and consumption will be still more pronounced, if the people have to be provided with a standard diet giving at the minimum 2,800 calories per adult per day and 3,500 calories a day per worker, considered necessary for subsistence in Indian conditions.

The Provinces of Bombay, Madras and Bengal are said to be the major deficit provinces, while Assam, the C. P. and Berar and Orissa may be broadly reckoned as surplus areas. But excessive rains in the C. P., floods in the U. P. and Bihar, cyclone in Bombay and failure of harvests in Western India, have caused an increase in the deficits of the deficit provinces and a decrease in the expected exports from the surplus regions, thus leading to a deterioration in the food situation. The policy of 'Decontrol' adopted in November 1947, inspite of absence of any improvement in the supply-demand situation accelerated the rise in the general level of prices during 1948. The wholesale price index which registered an increase of 8% during 1947, rose by 16% higher by November 1948. In deficit areas like Bombay, the rise was 100% in case of jowar and 200% for rice. It is found that on account of rise in prices of controlled as well as decontrolled commodities, the cost of living of the farmers in Bombay rose by abont 40%. This factor compelled the Provincial Government (Bombay) to recommend an increase of 50%, as a special case, over the procurement prices obtained before 'Decontrol', whereas the maximum increase allowed in most of the states and other provinces was only 25% over the level of pre-decontrol prices after the reimposition of controls in September 1948. Apart from the population increase at the rate of about 4 million a year, there are also other factors responsible for the delicate food situation in the country. With the gradual extension of rationing to rural areas, the responsibility of the Government to procure food is also increasing; and it is estimated that by the end of the current year about 14 crores of people would be brought under rationing. The 'Partition issue' not only caused a serious disruption in the normal economic life before and after the Radcliffe Award, but as a result of the division the Indian Union had to forego some of the finest irrigated tracts in the country in the Provinces of Sind and West Punjab. The Partition of India has left us with greater proportion of population and diminished facilities for agriculture, which

*According to the statement made by the Food Minister of India during the 'Food Debate' the total production of 8 major food crops in certain areas of the Indian Union during 1947–48 amounted to about 42.66 million tons as against about 42.57 million tons in 1946-47. If this is taken as correct, the figures have to be read with the increase in population at the rate of about 40 lakhs per year together with the wastages of food-grains involved during storage transport, etc.

their requirements and supplies expected to be available from indigenous production and international trade", have recommended to the Economic Commission for Asia and the Far East that increased supplies of fertilisers, farm machinery and irrigation equipment to India are essential for the success of the Government's short term measures and long term projects for stepping up food production.

Nearly, all the cultivated land in India is deficient in nitrogen and phosphorus. It is estimated to effect a 20% increase in India's rice output, over 3 million tons of oil cake and an equal quantity of bonemeal, 33 million tons of farm yard manure and compost, 22 million tons of green manure and 0.763 million tons of ammonium sulphate are necessary. India is importing 0.15 million tons of chemical fertilizers annually to supplement her domestic production from the U. S. A., Canada, the U. K., Belgium and Italy which are evidently insufficient to the needs. It is well known that only half the quantities of the fertilizers asked for by India was allotted to her by the International Food Council, which includes the available quantities from indigenous resources in India, and the total net quantum of fertilizers received so far was about a third of the demand. In view of the uncertain and meagre supplies of chemical fertilizers from abroad, the case for developing fully the indigenous resources as composts, night soil, green manure, plant ashes etc. is strong. Both from the economic and scientific view points, the use of organic manures is most suited to the Indian conditions and the chemical fertilizers may be used only for top-dressing and heavy crops. Due to the unscientific manner of preparation of the town composts, compost manures have become popular with the peasants. Moreover, chemical fertilizers need irrigation and adequate moisture in the soil to get assimilated by the plants and as such for dry lands application of chemical manures is not possible and it may do harm, if no adequate water supply is available. In fact the benefits of application of manure are realised to a greater degree in the second season or year rather than the first in which a farm is manured.

Next in importance for increased production stand extension of irrigation, use of improved seeds, improved methods of cultivation and control of pests etc. Extension of irrigation makes intensive and double cropping possible for a substantial addition to agricultural production. But irrigation facilities cannot be increased in a short time and unless the large-scale irrigation schemes are completed, Indian agriculture will continue to remain 'a gamble of rain'. Apart from exploitation of the ground water by construction of tube wells and open surface wells (particularly in the Indo-Gangetic and other plains), there is scope in many areas for power pumping from rivers and drainage canals and for construction of small dams and reservoirs. Without long-term adjustments in land tenure and a reorientation of farm technology, a speeding up of the space of mechanisation of agriculture is not possible except for cultivation of waste lands. But efforts may be made for popularising the light machinery and improved implements. It is estimated that the loss due to pests and diseases alone accounts for about 10% of India's total food production. Steps may be taken to minimise this loss by application of insecticides and through better storage

and preservation. Lack of trained personnel as well as necessary equipments are stated to be the handicaps with regard to pest control, irrigation and mechanised farming. Government have to see that the facilities offered under various provisions of the Grow More Food Movement should be properly used or should not be misused. It is common knowledge to come across instances of misapplication of the facilities given for farmers for food production e. g. in case of manures, cement and other materials for construction. There is a good deal on the side of the home aspects of prevention of wastages of the available food grains and preservation of the nutritional values through better cooking and consumption of food. Space does not permit for an analysis of Government's policy of controls, decontrols and procurement.

To conclude, food has become more than ever 'one of the great preoccupations of our time'. To be selfsufficient in food is not just a matter of fixing arbitrary dates and declaring that the provinces have to stand on their own and the centre's help to the provinces will no longer beavailable 'unless in times of emergency'. Any attempt to upgrade technical efficiency will be of little avail, unless the farmer has been upgraded too. At present more is expected of the farmer than any one else in the community. If they expect that the Government have to guarantee them a 'Remunerative Price' for their produce, they have to realise that they have also to guarantee the community with the necessary quantities of produce. It is agreed everywhere that what is miserably lacking in the 'production drive' is the necessary psychological factor with the waning popularity of the Government (of course, not the leaders !) with the people due to the causes 'inherent' in the Congress economic policy. If the food problem is to be solved, enthusiasm and determination must be instilled into the minds of the peasantry and the community. Measures are to be speeded up with regard to abolition of the estates and other agrarian legislation to give necessary incentives to the Kisans and the farmhands for increased production. In this light, although the job of increasing production may be technically possible, there are economic obstacles due to the existence of under-sized holdings and undesirable tenures which present a real difficulty to transform the subsistence farmers into surplus producers. Our slogans may continue to be, 'Produce or Perish', 'Eat the Surplus and Wear the Surplus'.

For a comprehensive programme of planning for 'selfsufficiency' [1] the village, nay every farmer has to be reckoned as the unit and it must be seen that each village and each farmer has to produce surplus or at least be self-sufficient with regard to their own requirements of food grains. Although all avenues may be fully explored for imports of food grains, machinery and fertilizers in the immediate future, no undue reliance has to be made on foreign supplies and efforts have to be focussed to make the best utilisation of the local available resoures in the country or region itself. The duty of surplus areas to less favourably

1—cf. "Nor can we fail to be impressed by the present plans for expanded production in India. The comprehensive planning for food in India keeps in view the existing deficit on existing scales of consumption; rising deficit due to population increase at the rate of 4 m.a year; and the need for better nutrition"; vide from the recent broadcast by K.E. Dodd, the Director General of the F.A.O. on 23-2-49.

situated areas or individuals need not be emphasised. It should be one of help and not of exploitation. As the delegates declared in the covering 'Declaration' of the Food Conference held at Hot Springs, May 1943, "The Primary responsibility lies with each nation for seeing that its own people have the food needed for life and health; steps to this end are for national determination. But each nation can fully achieve its goal only, if all work together". In so far as our country is concerned a permanent solution of the food problem lies in reconstruction of agriculture as a whole. It is a programme which cannot be completed in a year, nor even in 3 or 5 years of the socalled reconstruction period. It is indeed a programme for a generation which will demand all the technical resourcefulness of experts, all the productive capacity of industry and national resources, and all the organising capacity of the leaders without any selfishness emerging out of personal or party considerations.

SOME OF THE MEASURES FOR INCREASING FOOD PRODUCTION

By : V. K. Kogekar

THE problem of sufficient food supply for all has been engaging the attention of everybody these days. Due to the partition of the country and the increase in population due to exodus from outside, the present food production in the country has fallen short of requirements and large quantities of food-grains are required to be imported from overseas every year. This state of things cannot be continued for all time without entailing a very heavy burden on the National Treasury. The question then arises what measures can be adopted to cope with the present food shortage ? With the above picture in view a few salient features are discussed here.

During the preliminary stages of the situation energies were mostly concentrated on the "Grow More Food" campaign with the object of getting more area under food crops. This measure obviously has not been able to solve the food problem satisfactorily. Naturally then other measures with special reference to the geographical and climatic conditions prevailing in the different parts of the country need exploration and schemes formulated for the increase in food production.

Development of Irrigation Resources

In some parts of the country rainfall conditions are rather precarious and under the present state of food shortages crop growing cannot be left to chances. To meet the situation therefore development of all possible irrigation resources must receive immediate and prompt attention. In a tract like the Deccan, for instance, where successful crop raising entirely depends upon the vagaries of the monsoons, every drop of rain water must be fully utilized for the use of crops. For this purpose the country must be strewn over with dams and Bhandharas. In the hilly parts, construction of earthen dams for joining two adjacent hills and thus converting the depressions or valleys

between them into tanks to hold and store rainfall water must be undertaken. The tanks formed by putting up such dams are known as "Percolation Tanks" in that, the water from these gradually percolates through the underground strata and feeds the wells in the surrounding lower areas. The water supply to these wells is thus fully assured and the same can be utilized to irrigate crops to save them from the uncertainties of rainfall. Without the formation of percolation tanks digging and constructing wells in the above areas mostly leads to failure of water supply and the task turns out to be a fruitless one. In addition to wells, formation of reservoirs by damming of streams, nallas and rivers wherever possible to arrest the flow of their water when in floods and utilizing the same through a system of canals for crop irrigation secures the certainty of the crops and yields are assured. In this way by undertaking measures against uncertainties of rainfall a variety of crops can be grown throughout the year and food production in the country can be successfully increased. Unlike in some foreign countries where rainfall is received almost throughout the year, in this country it is limited only to a certain period of the year and that too is uncertain. Under the circumstances development and utilization of all available water resources by the storage of rain water for timely use, seems to be the only alternative for successful crop production. For increasing food production therefore development of all possible irrigation resources is one of the prime necessities.

Full Utilization of all Manurial Resources

Manure is the life of the soil. The importance of manure is known from ancient times. In the Vedic literature, especially in the verses of 'RUDRA' reference is found to leaves of trees and the manure formed from these is styled as 'Shiva' meaning happiness for crops. Without sufficient supply of manure crop growth suffers and full yields are not obtained. All manure producing resources must therefore be preserved scrupulously and utilized for purposes of manure making. Owing however to the want of sufficient knowledge of the importance of available manurial resources many of these are wasted and are thus totally lost. Cattle 'urine' for example is a very valuable source of manure and weight for weight it contains double the quantity of 'Nitrogen' to that contained in the cattle dung. Though this is the state of things, cattle urine is mostly neglected and is thus lost, as sufficient precautions are not taken to spread some soaking material on the floor of the cattle byre for absorbing the same. In this way a very valuable source of easily available manure is lost. Similarly all sorts of organic wastages from the farm and house-hold of the cultivator are not properly stored and made into manure. The cultivators in general do appreciate the importance of manure for their crops, but to make them more 'manure-minded' a proper perspective of the importance of manure-forming materials from the scientific side is required to be instilled in them to prevent the wastage of the various manurial resources.

At present the cultivator uses a part of his cattle dung for making cow-dung cakes for use for his fuel requirements for house-hold purposes, and also sells some of the cakes as a source of income to meet his daily wants to a certain

extent. Recent experiments have proved that gas can be produced from fresh cattle dung and afterwards the dung can be utilized for manure purposes without detriment to its manurial value. If the use of this scientific research is made by installing small gas producing plants on cooperative lines, much of the difficulty of the cultivator as regards fuel would be solved. The gas produced from the cattle dung can be utilized for house-hold cooking, heating of water, etc., and for lighting purposes also and the wastage of an important, easily available, valuable manurial resource would be prevented.

Use of Better Yielding and Disease Resistant Types of Seeds

In addition to the adequate provision of irrigation and manure another measure of considerable importance is the use of proper types of seeds. In order to obtain proper crop yields we must have varieties of seeds of proved value as regards better yielding qualities. But even better yielding quality of seed is not a sufficient guarantee for getting an assured yield. The seed must be at the same time disease resistant. For producing the above types of seeds plant-breeding research in different regions with varying climatic conditions must go on continuously.

In western countries, especially in America the work of evolving disease resisting varieties of crops is always in progress. In the case of wheat, which is one of the important grain crops, it has been stated that more than 50 improved varieties of wheat have been distributed to American farmers in the past decade. They resist rust, smut, other diseases, drought, insects, or winter killing, major hazards that threaten crops in one place or another. They increased the total wheat production of the country by more than 800 million bushels in the years 1942 to 1946.

Better yielding and disease resistant varieties of different crops such as maize, barley, wheat, vegetables, such as tomatoes, onions, potatoes, other crops such as tobacco, cotton, sugarcane, sugar-beets and fodder crops such as Alfalfa i. e. lucerne have been produced in America.

For successful crop production therefore research work in the breeding of varieties of different crops is also absolutely necessary.

RESOLVING THE FOOD TANGLE

By : Mahesh Chand

INCLUDING Kashmir and Hyderabad, the Indian Union had, in 1941, a population of 31.8 crores. If we assume the same linear rate of increase as in 1931-41, then in 1949 our population should be about 35.8 crores. If we assume an over-all requirement of half a seer of cereal per head per day, our annual requirement would be about 60.6 million tons. Our production in 1947-48 was about 42.66 million tons. The deficit is about 18 million tons, i.e., roughly three-seventh of our production. On the other hand, if we assume an over-all requirement of six chhataks per head daily, our deficit would be 45.45-42.66 i.e., about 3 million

tons which is only one-fourteenth of the production last year. The truth may be somewhere between these two limits. If one were to strike a mean, one may place the deficit at about 10 million tons. In order to cover it the production must increase by about one-fourth.

The above analysis is from the short period point of view. From the long period point of view we should have to plan for a greater population. As even a two-year plan would involve some increase in population, the additional food-requirement may be kept at about one-third of the present production.

TABLE No. 1

Province	Percentage of total provincial production of cereals imported (Av. 1937-40)	Percentage Urban population (1941)	Percentage of provincial production which flowed out from rural $\frac{(iii)-(ii)\ (100-iii)}{100}$	Percentage of provincial production procured in 1947-48	Percentage increase in area under cereals during 1939-47
(i)	(ii)	(iii)	(iv)	(v)	(vi)
Assam	0.5	2.8	2.4	15	
Bihar	5.8	5.4	-0.1	2.6	yes
Bombay	15.9	26	14.2	6.5	7
C. P.	-5.8	12.5	17.6	8.7	6
Madras	10.9	16	6.8	20.8	
Orissa	-8.2	3.7	11.6	6.4	yes
U. P.	0.6	12.5	12	4.8	1.8
Punjab	-13.2	15.3	26.5		
Bengal	4.3	9.8	5.9	14.9	

*Vide Food Statistics of India, Statement No. LXXVIII, p. 136. The above calculations are made from that statement. It has already made allowances for seed and wastage.

Procure More

It does not seem to be unjust to assume that in the present period of emergency the percentage flow of cereals from the rural areas should be the same as before the War. It is also not wrong to assume that the over-all per capita daily consumption of cereals is the same both in the rural and urban areas. It is not known what percentage of the provincial populations are living in the urban areas. The figure is likely to be more than what it was found to be in 1941. If so, it should justify a greater flow of cereals from the rural areas. If we assume the percentage of urban population to be the same as in 1941, it would only tend to make the percentage figures given in column (v) of Table No. 1 an underestimate, and *not an* overestimate on that account. However, on the basis of these assumptions, column (iv) of Table No. 1 shows the percentage of the provincial cereals-production that flowed from the rural areas. Since the procurements made by the provincial governments are mainly meant for the urban areas, it stands to reason that the percentage of procurement should be equal to the percentage of peacetime flow. But it shall be seen that there is a great disparity in the case of Bombay, C. P., Orissa and U.P. As is evident from the area statistics given in the Interim Report of the Foodgrains Policy Committee, 1948,

the area under cereals has increased in each of these four provinces. There is therefore a justification in asking these provinces to raise their percentage procurement from 6.5, 8.7, 6.4 and 4.8 to 14.2, 17.6, 11.6 and 12 respectively.

Decline in Yield

The above suggestion would have to be modified if there has been a decline in the total provincial production of cereals:-

(Total yield in lakh tons)

Period	Bihar	Bombay	C P.	Orissa	U.P.
1934-39 (average)	44.2	35.3	35.6	16.3	79.1
1946-47	39.6	27.2	25.5	15.6	77.8

The total decrease in the five provinces is of the order of 2.5 million tons. It is particularly marked in Bihar, Bombay and C. P. The causes of this decline must be analysed and the controllable ones must be removed without delay.

However, in quantitative terms, the flow from the rural area pre-War and the procurement last year were as follows:—

(Quantity in lakh tons)

	Bombay	C. P.	Orissa	U. P.
(i) Pre-War (calculated)	5.0	6.0	1.9	9.5
(ii) 1946-47 ...	1.8	2.2	1	3.7
(iii) Decrease ...	3.2	3.8	0.9	5.8
(iv) Decline in yield during 1939-47) ...	8.1	10.1	0.7	1.3

Even if the whole decline in yield was to be a deduction from the flow of cereals out of the rural areas, it is evident that there is scope for procuring about 4.5 lakh tons additional cereals in U. P. With regard to the other three provinces, in an emergency it does not seem justified that the incidence of any decline in total production should be thrown on the shoulders of the urban population. It should be shared proportionately. If that be done there should be scope for procuring roughly 1, 2.5 and 0.5 lakh tons additional cereals in Bombay, C. P. and Orissa respectively. Thus there is scope, in a proper tightening of the belt, for securing additional 8.5 lakh tons of cereals. In order to be successful in this direction the Government of India shall have to adopt a strict and a strong attitude towards the provincial Governments, which in turn must tell its officers "to do or get dismissed".

Supplies and Support

It may be argued that the cereals are likely to be held back by the cultivators in the expectation of getting higher prices and that they cannot be compelled for fear of losing their political support. There are other platforms such as abolition of zamindaris and reduction in rents, from which this political support can be assured. But besides compulsion, it is also open to the Government and Congress leaders and active workers to approach the cultivators and appeal to them to rise to the occasion and part with greater quantities of cereals. It is really unfortunate- as I have felt it- that the contact of the Congress workers with the masses is not so continuous, regular and voluminous as is established by the *red banner-wallas* with the industrial workers or as was attempted by the erstwhile R. S. S. workers with those whom they wanted to win over. One sometimes does wish that if the Government ever lifts the ban on R.S.S., one of the conditions for lifting the ban should be that that organisation shall go to the villages and make the cultivators produce and supply more. Work must be one of the chief criteria for sending up persons on Congress tickets or for Congress offices. The Congress President is

expected to vitalise his rank and file and imbue in them such zeal. I remember a Head of the Economics Department narrating to me what the *chamars* and tanners of Kanpur told him: "We prefer to follow the man with the red flag. When we go to the factories, we find him at the gates. When we come back, we find him in our *bastis*".

Production Factors

Successful appeal to the cultivator shall not produce much additional food. For that we must pay attention to the factors that determine yield. Land reclamation schemes, good though they are, are a seven year schemes which are conditioned by many 'ifs' and 'buts' even in the reclamation of some six or seven lakh acres of land. Bringing additional land under the plough may be one of the items of the "Grow More Food" campaign. It should not be the main item. The main items that appear to suggest to me are irrigation, manure and anti-soil-erosion activities.

Irrigation

Under irrigation attention should be immediately paid to tanks and other resources of irrigation. In 1938-39, tanks accounted for the following percentage of the irrigated areas :—

Bengal	Madras	Bihar	Orissa
53.6	35.4	28.0	20.6
U.P.	Bombay	C.P.	
16.2	9.2	much	

The "other sources" (i. e. Jhils etc.) accounted for about 1/2, 3/4 and 1/5 of the irrigated areas in Orissa, Bengal and Bihar respectively. It is true that a few provinces did undertake a tank-digging drive last year, but it was not carried on with the intensity with which it should have been. That was the first year and so only 1770 tanks were cleared in U.P. That excuse cannot be entertained. Thousands of tanks must be cleared, dug and deepened before the next monsoon sets in. The Congress members from the rural constituencies and the Prantiya Raksha Dal persons must take an active interest. The Ministers and the parliamentary secretaries must make a whirlwind tour round and round to help this cause.

Manure

Simultaneously the developement staff and the agriculture officers should see to the digging of ditches and the preservation of cowdung in those ditches so that the sun's rays may not deprive the dung of its nutritive elements. Secondly, the farmers should be asked to plant the *sanai* crop after the rabi harvest and plough it in a few weeks before the monsoon arrives. The drive for making compost should be intensified.

Anti - Soil - Erosion

Likewise steps must be taken to check the toll of soil-losses taken by the "creeping death". In western U. P. the boundary lines are slowly vanishing on account of the tendency of the farmer to add a little more of the boundary land to his field before the adjacent farmer does so. With the reduction of the boundary walls the accumulation of rain water in the plots is reduced and the resultant flow is unchecked. If the cultivator would not agree to put back the boundary, let him plough his fields across the slope. Then the furrows shall retain more water and also check its rate of flow.

Restrict Non - Food Acreage

Before I end, I must mention that the area under non-food crops also deserves a careful study. Relatively higher prices

of oilseeds and sugarcane inevitably result in greater area being placed under these crops. Should the government find it difficult to manipulate the prices, it must restrict the area. In the case of cotton, during World War II, Bombay secured the diversion of the area to food by legally laying down that a certain percentage of the previous year's area under cotton must be placed under food.

This problem of transfer of area is of particular importance in Madras, U. P., Assam and Orissa. The following table is very helpful:—

Change in the area under cereals during 1939-47
(in lakhs of acres)

	Increase	Decrease	Maximum increase	Lost increase
Madras	—	-41.6	5.2	46.8
U. P.	4.7	—	24.8	20.1
Assam	—	-0.3	3.6	3.9
Orissa	0.4	—	0.7	0.3
				71.1

(Source : Interim Report of Foodgrains Policy Committee, 1948)

The last column of the table shows that if the increased area had been maintained under cereals, there would have been today an additional area of 7.1 million acres under such cultivation. During 1934-47 the average area required per ton of cereals has varied between 3.45 to 3.8. acres. So 7.1 million acres would have roughly yielded 2 million tons of cereals. The Central Government should ask the provincial governments to regain that position immediately.

Conclusion

To summarise the paper, we can get 1 million tons by tightening the procurement machinery, 2 million tons through transfer of area from non-food to food crops and a few million tons by the drive for tank-digging, manure and contour cultivation. For successful work and appeal, the Central Government must become strict; the Congress President and his colleagues must plod through the villages; the Prantiya Raksha Dal personnel and development staff should give an active helping hand; and in case the ban on R. S. S. is removed, one condition should be that it would intensely cooperate to secure supplies and greater production.

Read the Stars

So far this paper has paid attention to controllable factors and forces. Attention can also be paid to the cyclical fluctuations of yield and prices. Who knows we might now have good harvests for sometime and the prices may be tending to fluctuate downwards. We must plan, but we must read the stars too—not through astrology but through the analysis of the various time-series. Yet I must desist from attempting it here for fear of making the paper too long.

SCOPE FOR INCREASING PER ACRE OUTTURN OF FOOD CROPS

By: R. S. Shiwalkar

THE principal articles of food that need priority attention not only with a view to tide over the emergency but in order to formulate long range plans of food sufficiency are rice, wheat, millets and pulses. They occupy as much as 75 percent of the total cropped area, the other food crops like sugar, fruits and vegetables covering an additional area of 5 percent leaving hardly 20 percent for non-food crops among which raw materials for industries claim about 15 percent of the aggregate area sown in India. With about 80 crops there is little possibility of devoting more area for food production by reducing areas under other crops. The solution to meet our food deficits, therefore, lies in two broad-based alternatives (1) by bringing new land under cultivation and growing food on the same and/or (2) by developing our agriculture so as to produce more food from the existing area sown under food.

The land to be brought under cultivation can be divided into two categories, (1) land which is occupied but on account of some reason or the other has remained fallow, and (2) land which has not been occupied so far but being classed as a culturable waste can be brought under cultivation by cutting down the forests and breaking open the land for the first time. It is needless to develop the oft repeated comments that there are vast areas of the first category of land lying fallow in the country which need prior consideration allowing practically no scope for the second category of land to be brought under cultivation, as they are in most cases bound to be inferior to the former. The Central and the Provincial Governments have sponsored certain schemes to break as much fallow land as possible to grow food crops. Several centres have been opened to reclaim large areas for this purpose. In the Central Provinces and Berar alone 90 tractors of the Central Government and 30 tractors of the Provincial Government are at work to break weed infested old fallows and to bring them under crops. About 60,000 acres of land has already been opened by these units working in the Province. There are over 53 lakhs of acres of old and new fallow land available to be brought under cultivation in C. P. and Berar, out of which about two lakhs acres of fallow land have been broken on account of the pressure brought by a special legislation (The C. P. and Berar Cultivation of Fallow Land Act — 1948) enacted for the purpose. Howsoever fascinating the idea of increasing the total sown area may appear to be, there is a limit beyond which progress in this direction with the object of producing more food is not possible. A simple explanation for the land remaining vacant in this one of the most densely populated countries of the world is that it is less fertile than the average, that the climate of the area is too unreliable or that essential facilities of irrigation, eradication of noxious weeds etc. are lacking. The only approach to strike a permanent solution therefore, lies in developing the capacity of our land to yield more per acre than it does at present. With the population increasing at the rate

which are and can be made available to the cultivators. As a result of a series of experiments with compost, oilcake, ammonium sulphate and cattle-dung manure, used either separately or in combination it was found that a quantity of a single article or a mixture of two or three sufficient to supply 40 to 60 lbs. of nitrogen per acre, would raise the yield of rice crop from 60 to over 100 percent. Economics of each experiment or trial was worked out showing statistically significant net profits per acre in all the cases.

On light soils the application of 60 lbs. nitrogen in the form of groundnut cake (10½ mds.) increased the yield of paddy from 1079 lbs. to 2030 lbs. per acre; an increase of 88 percent and gave a net profit of Rs. 21-6-0 at the rates prevailing in about the year 1943. 40 lbs. nitrogen in the form of groundnut cake (7 mds.) increased the yield to 1714 lbs. per acre (59 percent rise) and gave a net profit of Rs. 14-5-0. Similarly on heavy soils the application of 60 lbs. increased the yield of paddy from 1067 lbs. to 2187 lbs. per acre, an increase of 105 percent giving a net profit of Rs. 21-7-0. 40 lbs. of nitrogen increased the yield of paddy to 1839 lbs. (72 per cent rise) and gave a net profit of Rs. 15-15-0 per acre. The application of 60 lbs. nitrogen in the form of compost (12000 lbs. or about 10 to 12 cartloads) increased the yield of paddy from 921 lbs. to 1549 lbs. per acre; an increase of 68 percent.[6] What is true about paddy land is true about all the cultivated lands with varying degrees of response to different manures. Instead of quoting results of experiments for other food crops a very common but convincing experience of practically all the average cultivators, regarding soil exhaustion, may be noted with interest. Agriculturists who know the use and value of cattle-dung manure as a traditional practice have a common method of its application. The manure is carted from the place of storage to the fields where it is first kept in small or big heaps and then spread over the intervening space. Plants of the subsequent crop growing on the patches of the field where manure was heaped remarkably differ in respect of their vigour, growth and colour from the general crop of the field; indicating that the entire field would grow a similarly vigorous crop if it were to receive the same quantity of manure as the patches.

The foregoing discussion with the illustrations of experiments and observations establishes that with quantities of suitable manures, the crop yields can profitably be raised to as high as hundred percent. Accepting that about 25 percent of the sown land receives somewhat adequate dose of manure, as is expected in irrigated areas, advanced tracts etc., we have three-fourth of the cultivated area which produces depressingly low yields for want of manures and low fertility. If efforts are concentrated and manurial resources are multiplied to meet, at least, half the requirement per acre found necessary to double its yield, it is expected our food problem would be solved to a very great extent. Even if three-fourth of our land under food crops is able to produce only 25 percent more than what it does at present, there would be an overall increase of about 18 to 20 percent in our total production, which is surely more than the present food deficit from which the country suffers. Utilization of all the natural resources to conserve and produce rich manures from vegetable waste matter and animal products like dung, urine, bones, etc., will afford an adequate basal dressing of bulky organic manures. They may be best supplemented by crushing all the oilseeds in our country and making available all the non-edible and some of the edible oilcakes at cheap rates for purposes of manuring. Town composts, fertilizers, etc., should be made to be freely used by vigorous propaganda, occular demonstrations and necessary financial assistance. All the results on farmers' holdings should be recorded for careful collaboration and future guidance. Unless individual holding is brought under observation and carefully developed by technical advice and other assistance, there are remote chances of improvement by drift and unplanned action.

There is immense and for the present unlimited scope for increasing the per acre outturn of food crops grown in India. If most of the energies and finances applied to bringing poorer lands under plough entailing thereby an additional burden upon our half-starved and distressed bullock power and the growing acute problem of manual labour, are diverted to growing 13 mds. of grains where only 10 mds. grew before the food problem of the country stands practically resolved. That would relieve the country of its dependence on foreign imports. We must start a country-wide campaign to fight the poverty of the soil which in its turn will remove the poverty of the cultivator. All measures—short-term or permanent—to fight on the food front must, therefore, aim at increasing the per acre out-turn of crops, for which there is unlimited scope in our country.

6. B. B. Dave - Manurial Requirements of Rice in the Central Provinces - Pages 21-23

OUR AGRICULTURE

By : Rao Sahib H. M. Desai

EVERYBODY now seems interested in Agriculture and through platform and press advocates increased production in agriculture to meet general requirements of food grains in as short a time as possible. Most of these people wonder why even with "Grow More Food Crops" drive, there is no material increase in the production of our food supply.

Some of the well-meaning people honestly inquire, is there no scope for increasing the production of our food supply as we see that with all the campaign, nothing substantial is coming out of these efforts except pious wishes and hopes. The intention of writing this article is to give the inquiring public some idea regarding the background of our agriculture so that they may judge for themselves why progress in the development of food resources of the country is slow and imperceptible inspite of all attempts by Government for push and drive.

Land and Its Classification

In the Bombay Province, we have about 487 lakhs of acres of total area, out of which we cultivate about 338 lakhs of acres. The remaining area which is about 148 lakh acres is not cultivated. Out of the cultivated area of 338 lakh acres, 280 lakh acres are under crops and about 58 lakh acres are under fallow i. e.

of over ten percent every decade and the area of cultivation steadily nearing its limit, a system of intensive, rather than extensive farming is urgently needed.[1]

What is often not realised by the general public and many of the workers is that the average yields of crops in India are depressingly low as compared to those of other countries. The following table[2] gives some of the comparisons regarding important crops.

Country	Crop yields in lbs. per acre			
	Wheat	Rice	Maize	Cotton
Egypt	1918	2998	1891	535
Germany	2017	—	2228	—
Italy	1383	4568	2079	170
Japan	1713	3444	1392	196
U.S.A.	812	2181	1579	268
China	989	2433	1284	204
India	660	1240	803	89

Rewriting the above table indicating the comparative yields of crops in other countries when 100 lbs. of each crop are produced in India, we have:—

Country	Comparative crop yields in lbs.			
	Wheat	Rice	Maize	Cotton
India	100	100	100	100
China	151	191	160	230
U.S.A.	123	176	197	301
Japan	259	278	165	220
Italy	209	368	259	191
Germany	306	—	277	—
Egypt	290	242	236	601

The average yield of wheat in India is about one third of that of Egypt and Germany and less than half of that in Italy and Japan. Similarly in respect of Rice, India produces about one fourth and one-third rice per acre of that produced in Italy and Japan respectively. And much the same story can be told of every other crop. India, thus remains woefully behind the rest of the world in respect of her per-acre out-turn of food and non-food crops.

The reasons of this sad state of affairs are not far to seek. The fact that India is a land of very great antiquities, offers an explanation for the depressingly low yields of crops from her land. Continuous cropping for hundreds and thousands of years has completely exhausted the Indian soils of their fertility. Dr. Clouston, the then Agricultural Adviser to the Government of India, told the Royal Commission on Agriculture in India, in his evidence, that "most of the Indian soils had reached their maximum state of impoverishment hundreds of years ago and would not get any poorer even if cropped without manures for hundreds of years more."[3] After analysing the experimental data at their disposal the Agricultural Commission were of the view that "a balance between the natural gains of plant food materials and those removed by crops and other losses—has been established and no further deterioration is likely to take place under existing conditions of cultivation"[4]. In his note on technological possibilities of agricultural development in India, Dr. Burns remarks that "Indian soils are at a stage in which, on the whole, there is neither increased nor diminished production. Judged from the results of over 5000 manurial experiments

1. M. Brown-India Need Not Starve - Page 23
2. Quoted by Sir Manilal B. Nanavati and J. J. Anjaria - Indian Rural Problems—Page 23
3. Agricultural Commission Report —Para 78
4. Agricultural Commission Report—Para 78.

in India and the variability in the yields of no manure plots, it is probable that in most parts of India soil fertility is stabilized at a comparatively low level. There are, however, indications that improved varieties with a higher uptake of nutrients may depress this level still further."[5] "This being so", he optimistically, yet very truly observes, "it is not difficult to ensure increased yield by manuring and specially by manuring with nitrogen for which the land has the greatest hunger". In this connection the following observations of the author over a number of unirrigated rice holdings of varying sizes in a village in the Paddy tract of the Central Provinces recorded over a period of four years may be noted with interest. Averages of like manurial treatments during the period of four years from 1945-46 to 1948-49 are grouped together and the average yields of such holdings for the corresponding period are shown in the following table.

No. of Holdings	Area in acres	Average of treatment per acre from 1945-46 to 1948-49	Average yield of Paddy per Acre in lbs.	Increase over no manure in lbs.	Percentage increase over no Manure
3	62	No manure	389	-	-
7	167	1 to 2 cartloads of F. Y. M. per acre	566	177	46
5	58	2 to 4 cartloads F. Y. M. per acre	852	463	119
3	20	4 to 6 cartloads F. Y. M. per acre	1035	646	166
1	43	1 to 2 cartloads F. Y. M. 2½ mds. groundnut cake 10 lbs. Anum-sulphate per acre	1078	689	177

Judged from the difference between the yields of no manure lands and those manured with some quantity or the other of nitrogenous (bulky organic manures) manures, it is evident, that the land under similar conditions of seasons and cultivation does respond to manuring, yielding higher outturns, even allowing the increased yields caused by some other factors except soil to be ignored in the observation.

Manurial experiments were conducted at the Rice Research Station, Raipur (C.P.) from 1935 to 1948 with the object of ascertaining the effects of some of the most important manures and fertilisers

5. W. Burns - Technological Possibilities of Agricultural Development in India - a note - Page - 121

in the process of recuperation for cultivation.

Out of the net cropped area of 280 lakh acres, about 8 lakhs of acres are cultivated more than once in a year having been favourably situated as regards equitable rainfall distribution or having irrigation facilities.

Out of the uncultivated area of 149 lakhs of acres, about 81 lakh acres are under the forest and about 60 lakhs are not available for cultivation being occupied by cities and village sites, roads, water courses, swamps, hills, etc., and the remaining area of about 8 lakhs of acres is lying waste being too poor for cultivation nor afford good grazing to cattle. At the most half of this area can be brought under the plough if developed by the state as it will require expenditure for its development out of proportion to its agricultural value for any private enterprise to undertake.

Accordingly it will be seen that our land resources are utilized to its maximum capacity and there is hardly any room for further expansion in this direction.

Of the total cultivated area of 280 lakhs of acres before the war, we used to grow food crops on about a little less than 200 lakhs of acres and the remaining area used to be under non-food crops like oil seeds, cotton, tobacco, fodder, etc. In the beginning of war years, "Grow More Food Crops" campaign was organized to advise farmers to grow as much food crops as possible by reducing the area under the non-food crops. This was followed up by the passing of the grow more food crops "ACT" to restrict the area under the non-food crops by legislation. As a result the area under cotton, groundnut and tobacco reduced with the proportionate increase of area under the food crops. The act coupled with bad seasons and low prices of cotton reduced the area under this crop even below the stipulated area under this crop to about 25 lakhs of acres. It may be safely stated that during the recent years, the area under the non-food crops must have been decreased to an extent of 15 to 20 lakhs of acres with the corresponding increase of the area under the food crops.

Area Under Food Crops

Of food crops we grow about 160 lakhs acres are under major cereals and rest under other food grains and pulses. Area under protective food crops like vegetables, fruits, etc., is hardly about 3 lakhs acres i. e. very negligible.

Of the major food grains rice is grown to an extent of about 20 lakhs acres with the production of about 8 to 9 tons. Area under wheat varies from 15 to 20 lakhs of acres according to the nature of the season with the production of 2.5 to 3 lakh tons.

Jowar is an important cereal crop of the province occupying from 75 to 80 lakhs acres with the production of 12 to 15 lakh tons. Of other cereals bajri is an important food grain crop occupying from 40 to 50 lakh acres with production varying from 4 to 6 lakh tons. The total production of food grain crop including pulses varies from 36 to 40 lakh tons in this province depending upon the season which is not sufficient to balance our food budget.

Area under Irrigation

It will be seen from the figures of acreage and production given above that we are producing about 1 ton of food grain for about every 5 acres of area. That is

because our production has to depend upon solely on rainfall. Out of every 100 acres of land we have hardly water enough from our irrigation resources i. e. wells, tanks and canals to irrigate even 5 acres. Because of complete dependence of our agriculture on natural rainfall our per acre yields are very poor probably the lowest in the world. Methods of modern agriculture like manuring cannot be adopted here on a large scale because of uncertainty of rainfall conditions. Our production is solely controlled by the whim of rainfall and fluctuations in our production between 15% to 25% are very common.

Holdings and Their Distribution

Our population according to 1940 census was about 200 lakhs out of which roughly 75 to 80% directly or indirectly depend upon agriculture. This undue pressure of population on land has resulted into formation of small sized holdings for the most of the farmers to cultivate profitably. The following figures relating to the year 1936-37 will give some idea regarding size of holdings and number of holders on these holdings :—

Classification of holdings	% of the total holders	% of total area
Upto 5 acres	48	9.5
Between 5 & 15 acres	29	22.8
,, 15 - 25 ,,	11	17.7
,, 25 -100 ,,	10	34.4
Over 100 acres	1	15.6

It will be clear from the statement above that nearly half holders have only 10% of the area to farm and about 75% about 30% of the area. The actual cultivated holding will not differ materially from this position. Concentration of such a high number of farmers on so small an area for farming must naturally result in inefficient farming with low per acre yields and loss of human energy due to forced idleness over the greater part of the year.

It is but natural that under such condition of our farming application of scientific methods for better and higher production may not find any fruitful field to operate. Where most of the farmers have less than 5 acres farm to cultivate he is naturally lacking in possessing efficient factors of production and as a result his production is bound to be low and insufficient to even supply him with the bare necessities of life. Under such conditions how can our farming be progressive by utilizing scientific methods for higher production ?

Bullock Power

In our production, we use only bullock power. We have about 30 lakhs of bullocks in this province for cultivating 280 lakhs of area i. e. about 18 acres per pair of bullocks. It will be seen, therefore, that some of the farmers having bigger holdings must be cultivating more area per pair of bullocks and some of the farmers having some holdings must not be having any bullock pairs of their own for cultivation. In both cases the result must be indifferent cultivation.

Those who have experience of the rural areas, will bear out this fact that only very few farmers achieve the degree of efficiency in cultivation which can be called satisfactory.

Ploughs

To cultivate 280 lakhs acres of area we have 10 lakh ploughs out of which one lakh are iron ploughs. Accordingly we have one deshi plough for every 28 acres of cultivated area, and one iron plough for 280 acres of area. We usually require two pairs of bullocks

to plough a field in the fair season, and, one pair to plough after the monsoon sets in, when land is fairly moist for working. Owing to these difficulties most of the cultivated area is ploughed periodically, i. e. when it gets bad with weeds. Lighter soils are usually ploughed more frequently and ploughing is usually done after the monsoon sets in. It will, therefore, be seen that only good farmers have a bigger holding. Sufficient bullock power can attend to this necessary operation frequently to keep the land in trim condition for production which majority of the smaller farmers cannot do. Accordingly their crops are always to compete with weeds for growth and as a result the yields obtained by the majority of farmers are always low.

Seed

As stated above, bulk of our farmers are tillers of very small area and hardly get enough food from their holdings to feed them all the year round. Under such condition to preserve good seed for sowing for most of such farmers is not practicable. Those who have experience of rural area can very well tell us the rush of most of the farmers to obtain seeds of whatever source available on day of sowing. Result of sowing indifferent seeds is poor germination, gappy stand and poor yield of crops.

Manure

Our chief source of manure is cattle dung and to a limited extent compost. The production of manure from both these sources might be roughly taken as about 9 to 10 m. tons. Of the cattle dung out of which the most important ingredient is urine is mostly lost in collecting and most of the value of manure is lost due to bad handling and indifferent storing. A good portion of this cattle dung is also burnt as fuel. The remaining manure that goes to the land is hardly sufficient to meet even a partial need of the soil requirements. Most of the available manure goes to irrigated crops and cash crops and as a result bulk of our food crop area is left to grow crops on its natural recuperative power. Under the conditions it is no wonder that due to poverty of land, yields of our food crops are low.

Acre Yields

As a result of all these factors one would not be surprized if our acre yields are very low. Acre yield for the food grain crops was 490 lbs. for quinquennium ending on 1934-35. For next period ending on 1939-40 per acre production was 450 lbs. and for the period ending 1944-45 it was 410 lbs. per acre indicating progressive decline in the last 15 years. This can only be ascribed to bad seasons or deterioration of soil productivity or both. But the result is clear i. e. that due to vagaries of nature our production fluctuates very widely from year to year and cannot be foreseen and always requires to be provided for.

Imports of Food Crops

Our province is a deficit one in the food grains. Our import before war through various sources used to amount to about 5 to 6 lakh tons of food grains, especially rice and to a lesser extent wheat and other millets. During the years of war and thereafter our imports have remained to the same level with a tendency to increase. With all the drive to increase production all these years, apparently we have not yet moved from the position of deficiency of food supply in which we were before the war.

Conclusions

From the discussion above, it will be seen that most of the farmers are small farmers. Our production depends entirely on natural precipitation and hence uncertain, and fluctuates widely. Most of the farmers are poor and hence cannot farm efficiently. We submit, under such conditions slight increase in yield if any, due to Government efforts, will hardly show itself up. Our main problem is socio-economic. Too much pressure of population which land is not able to bear; too few industries to relieve agriculture of its surplus population; want of small industries to supplement part-time engagement to agriculturists in the villages. When our agriculture is not self-sufficient and when most of those engaged in agriculture are empty bellied for the most of the part of the year, when nature on which our agriculture depends is whimsical, it is not a fruitful field to apply results of scientific researches for its development and expect visible results.

Under the circumstances, therefo re, under which our farming is carried out to-day, if there be any substantial improvement in our production due to various efforts of Government in this direction, it will be an agreeable surprise. What is wanted is effective control against vagaries of a season. This can only be achieved by providing irrigation. Accordingly in Government efforts to increase production IRRIGATION should be given the top most priority.

PROBLEMS OF INDIAN AGRICULTURE

By: M. S. Swaminathan

RECENTLY I heard a prominent Politician remark that agricultural research carried on in this country during the past one decade has failed to produce any results in the direction of augmenting the food production of our country and that henceforth there should be a radical re-orientation in the research methods adopted. He was further of the opinion that a poor country like India can ill afford ivory tower research divorced from the realities of life and the needs of its cultivators. I admit that ultimately all research must be judged from the contribution it makes to the welfare of the masses and that it is the needs of the cultivators which research workers must always keep in view. "Science in the service of the country" must be our motto. But to say that agricultural research has so far failed to produce any visible results in this country, is a gross distortion of facts and rather unfair to the scientists who have made notable contribution to the progress of crop production in India. If the results accruing from agricultural research have not been as appreciable as they ought to have been, the reasons are to be found in places other than the research stations and laboratories. In this article I shall briefly analyse the causes for the low agricultural output of our country and for the non-application of scientific methods of crop production on a large scale.

It has become a fancy for all people to compare the yield per acre of our country with that of America, Japan,

adopted to extend the area under irrigation should be more popularised. The subsidy for the digging of wells for irrigation purposes should be continued and made available more easily. The extension of the rural electrification schemes will also enable the farmer to get the necessary power to pump out water from the wells.

Our attention has already been drawn by the Hon'ble Shri Jairamdas Doulatram to the weakness of the organisation for getting the results of research passed over to the farmer and translated into action. It is a question which troubles the agricultural administration in every country and particularly obsesses the public men concerned with agriculture. The United States seems to have got over this difficulty to a large extent by means of its excellent Extension Service and with the help of the commercial agricultural corporations which are engaged in seed production and distribution. The inherent difficulty in our country lies in the fact that agricultural production is split up among a number of relatively weak units, limited by lack of capital and personality. In our agriculture there are no great corporations, the resources of which enable them to take a long view about the adoption of a new process. As Sir Manilal B. Nanavati said, "the fundamental problem of agriculture is to transform this occupation from a mode of living into a business proposition for the benefit of the cultivating class". Indian agriculture should become organised as an industry before it can reap the full harvest of research. Then alone it will be possible to adopt the improved methods that are the outcome of investigation and knowledge. The adoption of co-operative or collective farming seems to be the ideal solution to this problem. It is a matter for regret that our provincial Governments are not taking any steps towards encouraging the formation of co-operative farms. The Government of India sent a delegation in 1946 to Palestine to study the organisation of collective farms in that country and that delegation has submitted a valuable report. While the delegation is of the opinion that collective farming as practised in Palestine, where "the extent of mutual goodwill and cooperation practised is almost utopian", may not be a practical proposition in India, they suggest "that experiments on cooperative farming should be taken up on a wider and intensive scale where the members can form a commune of their own not only for joint agricultural production but also for marketing and undertaking other social and economic activities for the commune as a whole". But so far no action seems to have been taken to implement the recommendations of that delegation. In this connection, it may be remarked that it has become a custom with the Government to appoint a committee whenever it is confronted with a problem but later on to remain inactive without taking any measures to put the suggestions of such committees into action. This is a legacy left over by the previous Government and it is to be hoped that in future the Government will be as energetic in implementing the recommendations of the committees appointed for specific purposes as in constituting them.

The popularisation of co-operative farming will solve the difficulties that at present beset the introduction of mechanised farming in our country. Tractor farming should be resorted to in all dry-farming areas, in order to produce

fine tilth to keep down weed growth and to conserve moisture in the soil. The problem in these areas is how best to utilise every inch of rainfall to the best advantage of the crop. Tractor farming will facilitate the preparation of the soil within a short duration so that the seeds may be sown with the onset of rains, thus aiding to overcome the time factor. Ploughing with bullocks, in such areas will have to wait until rains come to soften the soil. There is a great possibility for introducing mechanised agriculture in many plantation areas where there is a heavy incidence of Malaria with a consequent prevalence of acute labour shortage. The task of bringing more land under cultivation is also greatly simplified by the use of Bull Dozers and other power machinery to open up and level the virgin land and thus render it fit for cultivation. At present the Central Tractor Organisation of the Government of India is doing valuable work in this direction. However, those who desire to see our agriculture mechanised to the same extent as Russia or U. S. A. should remember the fact that while labour and not land is the limiting factor to crop production in those countries, the same is not strictly the case in India. I will never advocate the adoption of power cultivation solely for the purpose of making more money by economising labour and cattle, as all-out mechanisation will undoubtedly cause unemployment with a consequent upset in our economy. Tractor farming should be encouraged, popularised and immediately adopted only in regions where it is found to be essential for the purpose of increasing the food production. Of late, the craze for tractors has been so great that many of our people have purchased certain type of tractors without due regard to the type of soil, climate and crop to be grown. I will particularly mention the purchase of large number of "walking tractors" by our landlords, many of which are bound to be of no great use under our climatic conditions. Having bought the wrong and useless types of tractors, these enthusiasts of tractor farming have become dis-illusioned and even apprehensive of the capabilities and utility of a tractor. This is a danger which has to be avoided at all costs. Not only does this lead to the frittering away of the money of our ryots but this will also hamper the adoption of power cultivation even in areas where it is necessary to adopt it. The only way to prevent such a development is the formation of a Tractor Testing Organisation, on the model of the one attached to the National Institute of Agricultural Engineering in England, which will be responsible for selecting the best type of tractors suitable to our climatic and soil conditions. In the last budget of the Central Government, an allocation was made for the starting of such an organisation and until the time it comes into operation, our agricultural departments should see that the ryots do not go in for the wrong type of tractors. The Government of India, after the Testing Organisation comes into operation, should not allow all sorts of useless machines to be imported into our country. It is also necessary that there should always be an adequate store of spare parts so that serious dislocation in work should not happen in cases of breakdown of the tractor machine and implement parts. This is a matter to which the tractor dealing firms should pay sufficient attention.

Next to poverty, the other great impediments that stand in the way of scientific methods of farming getting

popular are illiteracy and lack of knowledge of those methods. This difficulty may be got over after the adult education and compulsory primary education schemes of our Provincial Governments come into operation. Agricultural education is a problem of national importance and agriculture should find a place in the curriculum of all schools. We realize today that farming is the basis not merely of all the material necessities but also of all the material amenities of life and indeed that alone among the industries provides the token whereby all men in all ages and in all lands express their mutual good will, their loyalties and all that discriminates human life from animal existence. There should therefore be a place in the education of everyone for the development of an appreciation of the farming industry and for understanding the manifold aspects of the farmer's life. This will become possible only if agriculture is made a compulsory subject in our schools upto a certain standard. The problem will not end with that. I have heard some research workers pmplain about the apathy of the public no ards Science but perhaps the fault whicmuch on the side of men of Science aboutat of the public. Generally, As Sirts fail to tell the public what is fundame. Men of Science surely have transform tthe public to learn to write of living into a as to bring home to a far the benefit of an is reached at present Indian agriculture and what it is doing. nised as an industhe growing interest the full harvest of re evinced both by it will be possible to the public, there is methods that are the ou days are coming tion and knowledge. ignore the fact co-operative or collectivin production in any country must always be the cultivator himself. As has been rightly said "the wealth of a nation lies not in the material resources at its command but in the energy, the initiative and the moral fibre of its people; without these attributes no country can become permanently prosperous; with them, no unfavourable circumstance can long prove an insuperable obstacle". It is this human factor that is ultimately going to count whether our plans for increased production are going to be successful or not. Sincere and honest work is the need of the hour. Lord Mountbatten suggested the proper cure for India's ills, when he said "we want architects who will not only be good at designing better houses and towns but who will not let their plans be changed when the employer wants a design made cheaper at the expense of the workers; architects who are employed on town planning who will not give away to a Town Council who want to save money at the expense of the inhabitants. We want doctors who will go out and fight for decent health services in the country, Scientists but not just scientists who go and invent things but do not care what happens to their inventions but who will see that they are used to good purposes; teachers who will develop their pupil's characters as well as brains." All talk of increased production and national reconstruction will only remain as a myth and a Chimaera, if we are not going to get the right type of individuals to do the proper jobs.

Some people seem to think that all will be well with India if we can control the rapid growth of our population by the adoption of suitable birth control measures. But as was emphasised by Pandit Nehru at the time of his inaugural address at the E.C.

A.F.E. conference at Otacamund, the problem is just not one of over population but of under development of the natural resources and inadequate utilization of human knowledge to develop these resources. Due to the advancement of Science, many things have become possible now and it requires both imagination and firm will on the part of our Government and people to make use of that knowledge. Science had done wonders in giving the farmer the means to increase production and although he has used them to a little extent, the potentialities especially of fertilisers and of scientific breeding still remain very great. There is enough land in this country to produce sufficient food for all. There is enough technical skill and know how we can be confident that we can meet the challenge of hunger successfully. What is needed is a sincere effort by all concerned with our agriculture namely the scientists, the officials of the agricultural department and the ryots to increase our food output by all the following three means: (1) by bringing more land under cultivation, (2) by preventing land going out of cultivation, and (3) by increasing the out-turn of the land actually under cultivation. The greatest public benefactor in India to-day is the man who makes two blades of grass grow where one grew before.

ECONOMICS OF MECHANISATION OF AGRICULTURE*

By: G. D. Agrawal

ECONOMICS and scope of 'Mechanised Agriculture' in India is yet a confused and controversial issue owing to the absence of a specific and uniform meaning attributed to the phrase. If some take it to mean improved farming, others regard it as 'ploughing, harvesting and other operations by tractors and machines as against the country means—the plough and sickle.' An important official emphatically replied to a question of mine – "If India is to live and prosper as a respectable State in the comity of Nations, it has but to mechanise; for all prosperous countries of the West have had to mechanise agriculture first." More emphatic was the gentleman's reply when called upon to explain the effects of tractor cultivation on the crop yield — "Our implements work the soil only a small depth of four to five inches while a tractor will till eight to ten. A plant, thus, in the tractor operated soil draws on double the area and you can well imagine without another argument, the yield that would result." It is not only a case of individual thinking but unfortunately a good percentage of people think alike out of insufficient knowledge of facts. It is commonly believed that America and Russia have advanced because of mechanisation and therefore remedy for India too lies in revolutionizing her agriculture by mechanisation. We forget the entirely different sets of conditions existing in India today and those that existed in America and Russia yesterday – before they took to mechanisation. Yet we are not to be left behind in the race of nations for scientific improvements. We have to fit in things in our own frame work, without, of course,

*The paper was read at the Ninth Conference of the All-India Society of Agricultural Economics, Hyderabad (Dn.)

doing it any harm. The use of bullocks in farm husbandry is thought to be a sign of backward farming, but this is not always the case. We have also to be cautious of the powerful and well-directed propaganda (of the large financial interests concerned in the sale of implements) which aims at strengthening such belief.

The conclusion that mechanisation will lead to increased employment, based on the instance of use of power pumps in Coimbatore district of Madras, which has led to the intensification of agriculture in the area by making water available from very deep level, is hardly applicable in general. Recognition of the difference between employment-creating and employment-robbing uses of farm machinery is important in order to appreciate the effect of mechanisation on employment. Opening up of the uncultivated land, reclamation of the culturable wastes, draining of the marshy lands, provision of adequate irrigation facilities and such others may be unenterprising by manual and bullock labour; but the use of machines in these directions is sure to open up new avenues of employment to the already idle hands. Also, the seasonal labour shortages may be met profitably by the use of machines which will only supplement the human labour. But complete replacement of labour by tractors for cultivation is an example of its employment-robbing aspect.

The term 'farm mechanisation' is not used today in the limited sense of use of machines for tillage operation, harvesting and threshing of the farm produce, but includes power lifts for irrigation, trucks for haulage of the farm produce, processing machines, dairy appliances for cream separating, butter making, oil pressing, cotton ginning, rice haulling, and even various electric home appliances, e. g., radios, irons, washing machines, vacuum cleaners and hot plates. It is another factor which leads to difference of opinion about its scope as different individuals have different aspects of mechanisation in mind while dicussing it.

It is, therefore, necessary to mention that the term 'mechanisation of agriculture' has been used in the widest possible sense in the following discussion. Even then it will be wrong to treat mechanisation as a special agricultural technique leading to increased yields. It is hardly anything more than a labour and time saving device. The only proper way of looking at it is with reference to the respective economies possible by it in comparison with other alternatives for performing a certain agricultural operation. Laying down the criterion for the use of machines in agriculture, Dawson indicates a free use of machines in countries where machines are cheap, while labour is expensive and, moreover, of a type qualified to understand and care for them, in such countries the introduction of labour-saving implements will generally result in a direct saving of outlay; even if it does not, the additional expense is so small and the need for economy in labour so great that the use of machines is economical. If we apply this criterion to India, we find that the machines are expensive, as they are not manufactured in the country, fuel is costly, labour is cheap and unskilled in the use and maintenance of machines. It therefore follows that the extent to which the labour—saving implements is an economy is much more limited here than in U.S.A. or other western countries.

However, there can be no two opinions on the urgency of mechanised help for increasing production where it creates further employment or does not compete with the bullock and human labour i. e. :—

1. Mechanised irrigation- provision of tube-wells, power pumps, etc. In India with erratic monsoons, the field for them is unlimited particularly in view of country-wide hydro-electric projects.

2. Breaking up of new lands.

3. Eradication of pernicious weeds for cultivation.

4. Draining of marshy lands.

5. Mechanisation in sparsely populated areas owing to unhealthy climate.

6. The use of machinery in meeting the seasonal shortages of labour in order that operations may be timely.

7. Miscellaneous- Contour ridging, embankments, village roads, drainage and irrigation channels, etc.

Seasonal Shortages and Timeliness of Operation

The issue of mechanised help during seasonal labour shortages is not so simple and clear cut. Shri Mayadas, Director of Agriculture, U.P., recommends the use of harvester thresher combine and tractors. The advantages claimed by him are:—

1. Quick harvesting of crops- a safeguard against inclement weather conditions.

2. Land available for producing second crops of pea and gram after rice.

3. Hot weather cultivation after rabi harvests.

4. Raising of early green manure or fodder crops on fields ploughed during summer.

5. Release of bullock and human labour for hot weather cultivation, growing second crops and more thorough cultivation, in case tractor cultivation is not taken up and only combines are used.

6. In the case of tractor cultivation:

(a) deeper cultivation in sugarcane areas.

(b) quicker preparation of seed beds enabling the raising of two crops in the year.

7. In the case of garden tractors :

(a) cultivation in orchards.

(b) quick preparation of seed beds and rapid harvest on vegetable farms.

The tillage operations may be performed with bullock-drawn implements as efficiently as with a tractor, but there is no doubt that mechanised appliances effect considerable economy in time and thereby minimise weather hazards. Performing of agricultural operations in time is of considerable importance in Indian agriculture as the intervals available for preparation of seed beds and sowing Kharif crops is often very short and delay, even of a few days in sowing, is of material importance in determining the stand of the crop and finally its yield. Similarly, in Rabi preparations, particularly where sowing is dependent on stored rain moisture in the field, the area sown, germination and the successful growth of the crop depend on how quickly the farmer is able to finish the sowing operations on his holdings, because the land loses moisture rapidly during that period. Weather hazards during harvesting and when the produce is on the threshing floor also considerably affect its quantity as well as quality. It cannot, therefore, be denied that indirect influence of

meet our requirements fully nor is our demand considered enough in volume to warrant researches by them for evolving machines suited to our conditions. This work will have to be taken up by our national Governments.

(g) *Displacement of existing labour population from agriculture:*— It has been estimated that even under existing bullock economy 10% of the workers were surplus on the basis of population, in 1941. Under mechanised farming, 77.5% of the total workers, i. e., 67 million workers will have to be provided for in other occupations.

According to Moore, "Unless employment is found in industry or in other agricultural requirements for such displaced persons, they become unemployed and willing to work for small wages which in their turn make hand labour so cheap that it becomes uneconomical to operate machinery. This necessitates a return to hand methods of production. The break in this cycle from hand labour through mechanisation to hand labour if accomplished will result from the skilfully engineered application of the competence of economists, industrialists, engineers and sociologists."

Future Scope and Economics of Mechanisation

Economic trends appear to favour mechanisation, though a vast majority is yet under-employed or unemployed. The reasons are obvious. We judge things by their economic worth. If a piece of work can be done more cheaply by a machine, manual labour is sure to be replaced by it. And it happened in industries. The cottage workers had to search for their bread somewhere else. Mechanisation of agriculture too appears to be on the progressive path whether the country adopts a capitalist or a socialist economy. The only difference may be that in the capitalist economy it may lead to exploitation and unemployment whereas in the socialist economy, its use may be regulated so as to raise the standard of living, increase the leisure period and reduce drudgery of certain types of human labour or human and bullock labour combined. The transition, in fact, had already set in after the first World War. Country carts gave way to trucks and lorries; power appliances took over the jobs of grinding, hulling, pressing and milling. If anything limited their spread in rural areas, it was their unavailability, the lack of power fuel and communication facilities. Also, with the arrival of cheap hydro-electricity, much more stimulus will be provided to the stationary type of installations.

The position of the bullock in the agricultural economy is weakening every day owing to its multifarious functions being taken over by power appliances. This has led to a shrinkage in the average number of working days, per pair, each year. Working days hardly exceed 120, on large sized farms employing more than a pair of bullocks while they are not even 100 on holdings below 5 acres which constitute the bulk, nearly 70% of the total holdings in India. As the work per pair of bullocks is decreasing with no decrease what-so-ever in their maintenance charges, the working cost per unit is constantly rising. Their maintenance has become even more uneconomical these days owing to the existing high prices of feeds and bullocks. With constant subdivision of holdings, the supply of bullocks has fallen short of demand inspite of its increasing under-

employment. There is also shortage of bullock power at present for cultivation needs as a result of the after-effects of the last war. And, as the bullocks compete, in these days of acute food shortage, with human beings for land for their own fodder and feeds, their position is becoming all the more anomalous in our agricultural economy.

According to the cattle census report 1940, there were 7.10 crore work cattle and 3.64 crore cows in India (Pakistan included). A very large number of cows are maintained not for milk but for raising male-calves only. With mechanisation, the number of such cows and the work animals will be considerably reduced. In U. S. A. the shift from animal power to mechanical power on farms, city, towns and mines, released 9 million crop acres since 1918. In India, though no land may be released for food crops as the fodder crops occupy only 4.2% of the cropped area, yet it will surely relieve the pressure on existing cattle food which is short of supply as given below:—

IN MILLION TONS

	Estimated Annual Requirements of Cattle Food	Available Quantity
Green Fodder	381.0	169.1
Dry Fodder	227.5	135.2
Concentrates	75.5	7.5

The above will enable mixed farming on a larger scale in India. Besides an increased supply of protective food so lacking in our diet, mixed farming will ensure proper supply of farm yard manure even after the reduction in the number of work cattle.

In other mechanised countries, because of meat eating habits, the male progeny of milch stock is easily disposed off. It will, however, be a ticklish issue here, with the disappearance of their needs for draft purposes.

We cannot ignore the other important phenomenon, i. e., inspite of labour surplus statistically, there is really a growing labour scarcity for agricultural operations in India; caste taboos and other social restrictions are to be held responsible. This also gives stimulus to increased mechanisation of agriculture.

The following estimates of expenditures show the economies of tractor farming:—

The Estimated Expenditure on Bullocks and Labour on 60 Acres and 250 Acres Farms

Particulars and Expenditures	Amount in Rupees	
	60 Acres	250 Acres
Wages of labour @ Rs. 30/- per month per labourer:		
(a) For 18 labourers on 60 acres ...	6,480	...
(b) For 75 labourers on 250 acres ...	...	27,000
Expenditure on bullocks @ Rs. 3/- per pair per day:		
(a) 6 Pairs on 60 Acres ...	6,570	...
(b) 25 Pairs on 250 Acres ...	...	27,000
Total Working Expenses...	13,050	54,000

Estimated Expenditure in Tractor Farming

Following set of implements would be required:-

		Rs.
(1)	One 30 H. P. Tractor	7,500
(2)	One two furrow plough	1,100
(3)	One Disc Harrow	1,200
(4)	One Seed Drill	2,000

mechanised farming on yield in this respect will not be insignificant.

It is, however, necessary to launch a few pilot projects in selected areas. The projects must study the complete economy of the area under them and minutely observe the effects of mechanisation on agriculture both on a short and long term basis.

Shri Mayadas believes that as a result of introduction of harvester thresher combines alone and consequent release of bullock and human labour for efficient cultivation, the increase in rice production would be about 2 million tons and about the same in wheat and barley in U. P. alone, i.e., an increase of 4 million tons, the present overall target of increased production of foodgrains in the whole of India to be achieved in five years. It raises a number of technical issues which need be experimented upon i.e., the effect of quick seed bed preparation on the soil structure and its susceptibility to erosion, double cropping and its effect on the total yield, adequacy of canal water to meet the extra demand for irrigation, effect of hot weather cultivation in increasing yield, etc. The existing data regarding these are not adequate for drawing conclusions. Experiments on double cropping carried out in certain tracts show decrease in rice or wheat yields when compared with their sowing after fallow. There are other difficulties in the way. How are we going to enforce a limit that such machines would function only as supplementary to the existing labour force and would not replace it? How is the present land organisation of innumerable small holdings to be fitted in with collective harvesting and without overhauling itself into cooperative joint farming, collective farming or individual holdings of atleast 8 or 10 acres? Can the agricultural economy bear the strain of maintaining both bullock power and machines?

Employment Robbing Uses and Present Scope

We come now to the issue of farm mechanisation in the sense of tractor cultivation and harvesting and threshing with machines on land already under cultivation. Two questions suggest themselves:

1. Will it be practical wisdom to mechanise our agriculture immediately?

2. Should mechanisation be our long term objective?

As regards the first question, the answer is probably easy. Even if it is desired to mechanise agriculture immediately it is not possible for the reasons given below:

(a) *Lack of tractors and machines:*—The tractor requirement of India including Pakistan of all types and sizes is estimated at 15,800,000 while there is a world shortage of tractors and agricultural machines. It is not possible for the manufacturing countries to meet even a fraction of our need.

(b) *Lack of cheap fuel:*—Cost of petrol is 4 to 5 times higher in India as compared to other countries with mechanised farming. The output of energy per capita, per annum, or 'energy index', is 300 units for an average American whereas it cannot be more than 90 units for an average Indian. Out of the 7 lakhs of villages in India only 1,200 have electric service of any sort. We consumed, according to Dr. N. G. Chatterji, in 1937-38 only 326 million gallons of liquid fuel of all kinds of the total value of nearly ten crores of rupees

of which only 76 million gallons were produced in this country. The consumption of petrol in India is estimated at 180 million gallons of which only 18 million gallons are produced in the country. The consumption of liquid fuel per head is less than a gallon as against 50 gallons in U. S. S. R., and 25 in the U.K. This consumption is likely to go up by 5 to 8 times its present figure with the growth of industries and improvement of roadways. It will require either the import or the manufacture of liquid fuel to the extent of 60 crores of rupees. If we add to it the requirements of mechanised agriculture, we can well imagine the enormous quantities of fuel requirements and our dependence for it on other countries. Dependence for fuel on foreign countries for strategic reasons may prove the strongest point against future mechanisation of agriculture in India and may have to be given up in the interest of national security unless the countries of the world or the U. N. O. is able to secure by effective mutual agreement a guarantee of world peace.

(c) *Lack of necessary capital:*—The Indian farmer in a deficit agricultural economy is proverbially poor. Instead of having any surplus with him for purchase of machinery he has a crushing burden of debt, the total value of which has not shown any decrease inspite of such high agricultural prices. Persons with holdings over 8 acres have no doubt lightened their burden of debt but those below it, who far outnumber the former, have not received any relief.

(d) *Lack of necessary skill and machine-mindedness together with inadequate workshops and repair service:*—In this connection Moore observes:—

"A deterrant to mechanisation in many tropical regions is the lack of understanding on the part of the people of how to select, operate and maintain machinery at a high level of efficiency. To meet all the machine repairs and difficulties that arise in the normal operation of farm machinery it requires considerable training and understanding.

"Many practically new articles are lying idle throughout the tropics, broken and unused, because they were attached to too heavy a tractor; on the other hand, many new implements are unused because the farmer has insufficient power. I have seen practically new tractors standing idle for months awaiting the arrival of simple repair parts."

(e) The existing land system is based on bullock economy and is characterised with innumerable small holdings. The holdings to be organised into economic units will take time. Full economy of mechanised agriculture can be realized only when the farm unit is large enough to fully utilize a minimum unit of machines. A Montana Study (U.S.A. 1933) indicates that there are atleast three reasonable efficient sizes of one man wheat farms. The smallest one man 3 plough tractor farm has an optimum acreage of 800 acres, one man 4 plough tractor 1,100 acres and for one man 6 plough tractor the optimum size is 1,800 acres. However, more recent advances in farm machines make possible their use on even 10 acre holdings on a cooperative basis.

(f) *Lack of machines suiting our requirements:*—There is a great need of research to design machines and implements suited to our soil, climate and farm economy. The foreign makes do not

(5)	One Reaper	1,200
(6)	One Thresher	11,000
(7)	One four wheel Trailor	1,500
	Total	25,500

In the case of sugarcane cultivation one 'Two furrow mounted Ridger' and one raw crop cultivator costing Rs. 2,200/- would also be required.

If the cost of 30. H.P. tractor of implements be estimated at about 25,500/- for a farm of 60 acres and 27,700/- for a farm of 250 acres and working hours in cultivation, sowing harvesting, threshing, etc., at 600 and 2,500 respectively, the working expenditure would be as follows:—

PARTICULARS OF EXPENDITURE	AMOUNT IN RUPEES	
	60 Acres Farm	250 Acres Farm
A. STAFF	Rs.	Rs.
(i) One tractor operator @ Rs. 80/- per month	960	960
(ii) One tractor cleaner @ Rs. 40/- per month	480	480
(iii) Labourers @ Rs. 30/- p. m.		
(a) 2 labourers on 60 acres farm	720	
(b) 5 labourers on 250 acres farm		1,800
(iv) Dearness Allowance at 20%	432	648
	2,592	3,888
B. MATERIALS		
(1) Power kerosene @ Rs. 1/8/- per gallon per hour consumption being 1.8 gallons:	Rs.	Rs.
(a) For 1080 gallons on 60 acres farm	1,620	
(b) For 4500 gallons on 250 acres farm		6,750
(2) Lubricating oil @ 1 gallon for every 35 hours @ Rs. 4/- a gallon:		
(a) For 17 gallons on 60 acres farm	68	
(b) For 71 gallons on 250 acres farm		284
(3) Grease, Sundries and spare parts at 10% of total investment on implements:		
(a) on 60 acres farm	2,550	
(b) on 250 acres farm		2,770
(4) Depreciation:		
(a) at 7½% on 60 acres	1,913	
(b) at 15% on 250 acres		4,155
(5) Interest at 3%:		
(a) on Rs. 25,500/-	765	
(b) on Rs. 27,700/-		831
	6,916	14,790
Total Working Charges for 1 year	9,508	18,678

The comparative costs of wheat cultivation per acre on mechanised and non-mechanised farms are given below:—

Particulars of Expenditure	Expenditure per Acre in Rupees	
	Non-mechanised Muzaffarnagar.	Mechanised Bhadruk (Lucknow)
Machinery	...	55.56
Bullocks	113.73	11.37
Labour	69.13	22.20
Seed	12.39	19.00
Manure	64.87	2.00
Irrigation	13.06	19.53
Supervision	16.19	18.56
Land	4.69	10.00
Depreciation & Interest on fixed capital	9.13	10.00
Interest on working capital at 6% for 6 months	9.10	5.13
Miscellaneous	1.70	3.00
Total	313.99	176.35

It will be seen that the difference in the cost of cultivation on labour and motive power between mechanised and non-mechanised farms is Rs. 93.73 per acre.

The estimate of expenditure in tractor farming is made liberally and if it errs it errs on the higher side; nevertheless, it is less by about Rs. 3,500/- when compared to the expenditure on 60 acres farm with bullock power. Ordinarily not more than 5% is allowed on total investment for repairs but the allowance made here is 10% owing to the lack of operative skill and high repair cost in India, at present. It may also be added that this very set of implements is capable of managing a farm upto 250 acres the economy in expenditure being considerably higher in that case i.e., the initial total capital investment in machinery is nearly equal to the cost of 25 pairs of bullocks while the working expenditure on non-mechanised 250 acres farm is in excess by Rs. 40,950/-. Ferguson's study all over the world shows that replacement of animals by a tractor can increase income from 50 to 150 per cent according to the size of the farm. This simple economic factor is pressing large farm owners to replace bullock force with tractors which they can purchase with the sale price of bullocks. A 30 B.H.P. Fordson tractor complete with set of tillage implements costs about Rs. 10,000/- which is equivalent to the value of 10 pairs of bullocks these days.

A word of caution is, however, necessary in applying the economics of these calculations in toto in case of Kisans and small holders. In their case major portion of expenditure shown here on bullocks and labour has not to be incurred on account of use of family labour and stock of bullocks in existence but in the case of tractor farming the advantage of family labour would not remain. Cash expenditure would be required for purchase of machines, fuel, repairs, and on the skilled staff whereas there will probably be left no alternative scope for gainful employment of the farmers and therefore, no purchasing power with them. The personnel for skilled work, e.g., driving of machines, would not be obtainable from amongst them immediately for lack of education and necessary training. In case of bullock farming about Rs. 12,000/- of the total expenditure of Rs. 13,000/- are earned by family labour or hired labour residing in the village but in case of mechanised farming hardly Rs. 1,000/- would be earned by labour and the rest, i.e., Rs.8,800/- will have to be

spent in cash on fuel, pay of skilled workers and maintenance of the machines. All the more, a larger part of this money will not remain in the country itself but will go out to foreign countries which would be supplying machines, parts and fuel. Before advocating large scale mechanisation, it is necessary, therefore, to understand its full economic implications.

As regards the formidable obstacle of small sized holdings in the way of mechanised agriculture it may be said that with the agrarian reform under consideration in each province it appears that in near future, the existing distribution of land holdings may be reorganised into more economic units or some sort of joint effort in various operations may be adopted even with the existing individual units of cultivation. In that case machines can be jointly owned and used on custom basis. Even in U. S. A. where average holdings are of the order of 148 acres, about 1.4 million farms or 23% of all farms in 1939 reported no tractor or animal power and used custom or exchange tractors or animals; 3.9 million farms of the 6 million farms were not highly mechanised.

Invention of new machines is widening their scope to operations which hitherto could be performed by hand or manual labour only. The new trend in manufacturing tractors and agricultural machines is to make them more adaptable to small farms and convenient for small pockets. Their efficiency is increasing, resulting in greater economies in operation and saving of money in comparison to manual labour. A few examples of new inventions are given below. A potato harvester digs, gathers, grades, sacks, weighs and delivers the potato to a waiting truck with an estimated saving of 50 dollars a day or more over the old way of handling the crop. The experimental planter opens the beds, plants the seeds and places the fertilizer all at one time. There is considerable saving in the quantity of fertilizer used and its cost in this method. The cotton picker has been designed to extract lint-cotton from the open balls. A sugarcane harvester cuts the cane and loads it at a speed of 7 to 8 miles an hour with an estimated saving of $\frac{1}{3}$ to $\frac{1}{2}$ of the hand harvest labour. Aeroplanes are being used for dusting and spraying crops against disease and pests. Rice fields to be airplanted are flooded first and seeded at abont 50 acres an hour.

In mechanised countries, the development of the general purpose tractor and its complement of tools in 1920s and the extensive use of rubber tyre in the late 1930s helped greatly in advancing the usefulness of tractors and their widespread adoption. Formerly, the farm tractors were used almost exclusively for the heavier farm jobs, as ploughing and discing and belt work. The use of petrol fuel and rubber tyres has made possible the manufacture of light type tractors suitable for garden cultivation and small farms. There are available in the market a number of types of garden tractors varying in horse power from 1½ to 10. The small 1½ H. P. to 2 H. P. walking type of tractors weigh only 150 to 250 lbs. Another type, i. e., riding tractors are made upon a tricycle wheel arrangement, which makes for extreme manoeuvreability and is an answer to the problem of low cost small tractor with the labour saving feature of a large tractor.

Conclusions

Mechanisation in India has a future ahead though intervened by no lesser

difficulties. Our country is in various stages of progress. The cart and the plane, the boat and the ship are all side by side. So will be the case with mechanisation of agriculture. Bullocks and also the hand labour would not be completely eliminated from Indian agriculture in the near future. Probably 99% of the farms of the world are operated by manual labour. Even in U. S. A. the number of horses and mules on farms was more than 10 million heads in 1947; approximately 60% of men hours spent on farms in 1944 were done with the hands or with small hand tools– axe, pitch fork, shovel, hoe, husking peg, pruning knife, etc.

Emphasis may be laid on the need for regulated development of farm mechanisation. The reins should be held tight to secure an organised and systematic development. Great caution and steadiness are needed in the progress of that aspect of mechanisation which is to compete with our labour and bullock force in order to adjust the coming change without any violent disturbance in our agricultural and social economy. The provision of alternative avenues of employment to persons displaced must claim the first attention of the State. Also, there is need for regulating the agricultural income distribution with mechanisation of agriculture among the existing rural sectors in a manner so as to minimize the hardships of unemployment and ensure more leisure for cultural needs, such as education, recreation, health, hygiene and sanitation.

Experimental stations need to be established to test and try the different agricultural machines of various makes. Individuals should be able to get expert guidance and advice in selecting the machines for their requirements from the State maintained specialist staff. Wastage of funds and permanent damage to the land may be effectively prevented if the intending purchasers are in easy access to expert advice and are not left entirely at the mercy of manufacturing firms for the selection of machines and tillage implements. Experiments should be conducted to see that the use of different types of machinery in cultivation operations does not injure the long term capacity of the soil to produce crops. Temporary stepping up of production at the cost of long term productivity of soil should be discouraged. Lighter cultivation appears more suitable to our soils and climate. Recent experimental evidence in U.K. and U.S.A. is not much in favour of deep cultivation or soil inversion. Such a method of tillage which ruled the art of soil cultivation during the last hundred years is being found not in the best interest of soil conservation or long term maintenance of soil and its fertility. The more recent trend is in favour of stubble mulch farming which consists of stirring the soil a little below the surface, leaving the stubbles and residue of the previous crop undisturbed on the surface. This is very similar to what our much maligned country plough does. It has proved very effective in increasing the moisture holding capacity of soil and cutting losses by erosion. It is also necessary to point out that the association of mechanisation with deep cultivation or soil inversion is not correct. Mechanisation means use of power only; and tillage operations will depend on the type of the implements used. Very efficient light implements for stubble mulch cultivation have been designed in U.S.A. Similarly our agricultural engineers can also evolve

This partial mechanisation will automatically lead to the reduction of draught animals which is desirable to suit the fodder supply in the country.

Joint Operation:—Joint stock company operation is the chief feature of modern industrial organisation. It is the co-operation of land, labour, capital and organising skill that has brought about the astonishing increase in production. The same co-operation must be brought about in the agricultural industry. Peasantry which is the concomitant of poverty according to Lenin must go. However one may sympathise with peasantry, it cannot survive. Perpetuating peasantry is perpetuating poverty in India. Russia inspite of its sympathy for the peasant and the worker had to take up to collectivisation. Capitalist America is re-organising agricultural industry on the basis of bigger units.

The Motor Transport Industry in the Bombay Presidency which formerly consisted of one man concerns with one or two vehicles led to the pauperisation of many founders of the business. The pioneers of these one man concerns were targets of public ridicule and samples of irregularity. The same one man concerns when amalgamated into joint stock companies began to flourish. These companies have built improved types of vehicles, render regular service to the public, distribute profits to the share holders, pay handsome income taxes and supply regular employment to hosts of people. In the olden days, the proprietor was worried to death. Now the work is shared by the specialists leading to greater efficiency and economy. The business is so very satisfactorily organised that the Provincial Governments have begun acquiring it for the purpose. Nationalisation.

The same result will ensure if our peasants are organised into joint stock companies comprising an area of 500 acres or less according to local convenience. Such companies can raise loans for land improvement, and purchase improved implements and specialise in profitable crops and offer lively work to the labour as the labourers will be working in teams. Thereby the proprietary rights in land will be socialised in course of time. Unfortunately our Provincial Governments have been working in the reverse direction to pander to the mass susceptibilities. A day will dawn when peasantry will have to be liquidated in the national interest. How much wiser it is to do a thing before one bends to the logic of facts. At least joint cultivation unions be formed at present to achieve economy and specialisation in cultivation.

Specialisation:— Anybody and every-body without special aptitude for agriculture takes up to agricultural industry. Agriculture is considered fit for any fool. It has become a fool's paradise. This industry cannot improve unless it is rescued from the hands of incapables. Some sort of short courses in agriculture suited to the local conditions be started all over the country and intensive training be imparted to all engaged in agriculture. The agri-culturist must know the 'why' of every operation and be familiar with the economics of the industry. In course of time, there should be no agriculturis without a fitness certificate to carry on the business. It is necessary to eliminat the misfits and the ignorants from thi important business. Food supply important for national greatness. Th

business cannot be left to all and sundries. When every technician requires fitness certificate, why not an agriculturist?

Land to be easily transferable:— Change is the essence of progress. The ownership of land must also change hands o bring about improvement. The roperty which was a benefit to the ather might become a burden to the ons. Too much familiarity often breeds contempt. In such context, the sons be offered facilities to get rid of the burden. The landed property must become easily transferable as stock in the market. The property should not be tied to a person. The property must be possessed by a person who can make the best of the property. Now-a-days, the son of an agriculturist may not like to be an agriculturist. It is possible a city man may be lured by the quietness of a village life. Our emotions are strange. Our tastes are varied. So also our inborn capacities. Our progressive idea about property ownership should suit the various emotions, tastes and capacities. Good many restrictions have been placed on the transfer of land. They must all be removed. By the formation of joint stock companies, the proprietary rights in land will be converted into stocks and shares and be widely diffused. All the heart burning in society about the ownership of land will cease.

Storage of Rain Water

In all regions of uncertain rain fall, the supply of moisture is a great problem. In good old days, whenever the South Indian territory was ruled by benevolent dynasties, they made it a point to construct a village tank to impound rain water to be useful for purpose of irrigation and water supply to the villagers. The irrigation facilities though on a small scale, helped the cultivation of paddy in the village area. such tanks helped to supply underground water to the village garden wells. When the rain water is not impounded, it runs to waste carrying with it valuable surface soil. It is possible to select a site in the village area where rain water can be impounded and made useful for irrigation purpose—may be on a limited scale. Diffusion of such small tanks all over the country is more desirable than big irrigation schemes benefiting a few parts of the country. Well irrigated wheat crop and tank irrigated paddy crop will meet the limited local needs. We need not wait for constructing such village tanks. Local material and labour will serve the purpose. Mass bunding of fields and village tanks will take away the rigour of famines from all scarcity areas.

State Aid

Our Governments have to play an important role in modernising agricultural industry. They cannot rest content with supplying advice. They have to supply the *means* to bring about improvement. This work must be taken up by the Union Government on an All India basis. Our Provincial Governments are engrossed in regional, communal, class and party politics. As regards food production, India has to be organised as one whole. Having regard to various types of climate, soil, etc, each region can be specialised to grow distinct crops.

One uniform system of land taxation be applied to the country as a whole. The Zamindari and other special interests in land be bought over by the Union Government. The present inequitable system of Land Revenue collection must go. The landed property must be put on

par with other property. The taxation should be on income as in the case of other properties. All Provincial Governments have played havoc with land ownership. They have destroyed the harmony in the countryside. They have killed the co-operative spirit between the various interests in land. Besides harmonising and bringing about cooperation between various sections of the population, the Union Government has to supply the means in the task of 'growing more'.

The Union Government may set apart brand new paper currency to the extent of one hundred crores every year to finance the development plans. With the investment of every hundred crores of rupees, the yearly production will increase by hundred crores for some years to come. The clean lands, the bunds, the village tanks, the tractors and the trained peasants will be the backing against this paper currency. The increased production will absorb the inflation. Russia did the same (when it was boycotted by other capitalist countries) to achieve the modernisation of its agriculture and industries. Roosevelt did the same thing to fight depression. The earth is not going to crumble if we do the same thing in India. Desperate situation calls for desperate remedies.

If wars can be fought on the strength of paper currency why not wars against poverty. This is a bold task. Will the Union Government rise to the occasion? "Success often goes to those who dare and act."

GROWING MORE FOOD IN BIHAR

By: Prof. Lakshman Prasad Sinha

I

BIHAR not many years ago a surplus and exporting Province has now entered a state of chronic shortage and scarcity of food grains. The Food Grains Policy Committee declared Bihar as self-sufficient Province in its food resources and has accordingly recommended that no import assistance be given to the Province. But the fact of the matter is that Bihar's average deficit is of the order of 3½ lakh tons. This deficit went upto almost 12 lakh tons in the year 1946-47. This figure seems to be an exaggeration. But however the deficit increased from 3½ lakh tons. The deficit in the current year is also not likely to be less. In other words prospects for the present are not so bright.

This recurring shortage is no natural calamity, a result of one or two years crop failures; nor it is merely a War time catastrophe. The fact is that the Agrarian Food Economy of the Province has been heading towards the major crisis ever since the British superimposed a system of triple exploitation on Land Economy. The Congress Ministry too has bungled and hence the Land Economy of the Province is badly battered and shattered.

As a result of the neglect, bungling and hotch potch the economy of the Province revealed the following grim facts. The total areas under cultivation with the major Food Crops went on declining, whereas the population registered increase. The following figures will speak for themselves the state of affairs of the Province.

The Figures are for Bihar & Orissa

Year	Population in Millions	Areas of land under Cultivation in Million acres	Production of Major Food grains in Lakhs of tons
1911-12	36.9	22.8	109
1921-22	36.4	21.2	89
1931-32	40.4	20.2	78
1941-42	45.1	19.6	60

Total Production of Major Food Grains in Bihar

Year	yield (000 tons)
1938-39	4790
1940-41	3830
1943-44	4410
1945-46	3280

Thus during the last forty years (1911-12 to 1941-42) for example when the population of Bihar and Orissa increased by 8.2 millions the total area under cultivation of Food Grain registered an absolute decline of 3.2 millions of acres. The total production of food grains has been continuously going down. It has fallen by 40 per cent since 1911 whilst population has increased by 25 per cent. The imports of food grains have increased from 181000 tons in 1938-39 to 320000 tons in 1940-41 and that does not include 74000 tons of paddy a year from Nepal.

However this is one side of the Food Economy. Now let us have a peep into the Food Enquiry Committee Report conducted under the able supervision of Shree G. N. Sinha, now D. P. I. Govt. of Bihar. The report comes to the conclusion, on the basis of 20 Chhataks of unprepared cereals as the basic requirements of an adult, that the total requirement of the Province is of the magnitude of 359080636 Maunds on the basis of total estimated population of 37,929,000 in 1946.

Coming to production side there are three estimates. According to Food Survey the total production is of the magnitude of 226 million maunds. The Agricultural Statistics Department places the production estimate at 216 million maunds and according to Director of Agriculture the figure comes to 196 million maunds. If the Food Survey Enquiry Committee figure is accepted then the annual deficit amounts to 134 million maunds, which is very much more than our imports of roughly 10 million maunds of foodgrains.

Thus it is admitted on all hands that our Food Economy is faced with major crisis. The deficit Food Economy means starvation and misery not only for the masses but also for the classes. The pinch is not felt by a few well to do only.

Let us look at the various plans and schemes of the Government of India and Provincial Government of Bihar which have been launched to meet the food deficit. The much advertised and propagated "Grow More Food Campaign" has utterly failed to deliver the goods to the country. A peep into the report recently published clearly testifies to the sweeping remark advanced above.
The report runs as follows :-

No less than Rs. 31 crores have been spent by the centre and the Provinces on the "Grow More Food Scheme" since its inception in 1943. Out of this total the Centre's share in the form of grants and loans exceeds Rs. 19½ crores. The annual reports thus far published while fixing big annual Provincial targets, are silent regarding the annual increase in production achieved. The Official note bemoans

that "no easy and dependable method is available to assess accurately the increase in Food Grains Production resulting from the Grow More Food Campaign". Instead it seeks to give the tonnage of manure distributed, the number of minor irrigation projects financed and the quantities of seeds distributed. By another Press Note issued on the 23rd. April 1947 it is pointed out to us that "as a result of the Grow More Food Campaign the annual Food Production has increased by 3 million tons". The same Press Note stated that "India's annual demand on cereals was of the order of 64 million tons while her average production was about 56 million tons." If about 3 million tons of grains are added, there is a deficit of about 5 million tons. It is however not explained how India's deficit continues to grow despite her growing more food upto 3 million tons per year. According to the departments' claim India's food grains production since the beginning of the campaign should have gone up by 12 million tons in four years. Were this estimate true India should by now have a comfortable surplus of 7 or 8 million tons. Instead the figures of growing imports and rising prices tend to prove how little India grows under the "Grow More Food" plan. India's Food imports this year are expected to be of the order of 4.5 million tons—a record. "Import More Food" figures do not seem to tally with "Grow More Food" estimates.

The campaign of Grow More Food also has been the target of much criticism. In the words of "the Eastern Economist," the criticism is in reality misplaced. It never was a remedy for our Food problem and its fruits could not be our deliverance from the constant spectre of famine and mal-nutrition. There is also the fact that it never was worked with requisite energy and enthusiasm. The positive proof of this is furnished by the paucity of resources directed to the tackling of this major problem. The conclusion is inescapable. That the Grow More Food Campaign on the lines on which it has been conducted can not deliver the goods and any attempt to build large hopes of food self-sufficiency from Grow More Food Campaign is simply absurd and non-essential.

However not learning from the experiences of the past the Government of India has launched a new five year programme of Grow More Food Campaign in the year 1947-48. The sum granted amounts to Rs. 3 crores 36 lakhs. The same fate awaites this scheme as well.

These measures may be stop-gap remedies to tide over the Food deficits of the Economy. They cannot work as permanent measures and nothing better can be expected from Schemes of such types.

However let us turn our attention to the Province of Bihar and try to assess her achievements in the field of Grow More Food Campaign. In Bihar the "Grow More Food Campaign" had been a purely paper plan. Big production targets were fixed, many plans and schemes were floated and propagated to catch the imagination of the people, but no definite results were achieved. Files and files were heaped and piled, sections and sub-sections in the Patna Secretariat were created, but no amount of additional food grains was added to the total production of the Province. Ministers and Parliamentary Secretaries launched whirlwind tours and campaigns to increase the food production, but no tangible results were achieved. The only achievement which may be assigned to their credit is to befool the masses. To the ordinary man in the street—the underdog—the impact of food

prices, the rotten food stuffs—supplied through the ration shops clearly speak of the muddle and bungling created by the Food Ministry of the Province in tackling the province's most urgent problem.

As mentioned above there is no lack of Schemes and plans, which if launched in right earnest, may change the entire face of the Province and people may begin to enjoy the best and rich fruits of increased production. But there is no such drive and the people as a consequence have to suffer.

Let us look at the various schemes of Bihar Government.

The Bihar Government as early as 1946 passed the Waste Land Reclamation Bill. This is not alone. Other reforms of far reaching consequences in the field of Agriculture have been passed and introduced in order to ameliorate the conditions of the poor agriculturists. But the most significant of them all is the passing of "Abolition of Zamindari" Bill in the Province.

The Bill has been finally passed by the Legislature but its operation has been delayed.

All these Schemes are fine paper plans. No tangible results have been achieved so far in any direction. The Bihar Government's target for increased production to the tune of 3,70,000 tons by 1951-52 according to the plan of the Interim Central Government has been given a cold storage. According to that Plan, Bihar Government decided to construct 50 thousand percolation wells equipped with Persian Wheels. Eight thousand minor irrigation projects were to be completed and nearly 168 state-owned Electricity operated tube wells to be bored for pumping and irrigational purposes. Drainage by small canals and Reservoirs and Reclamation of Waste Land in Tribeni Bagha area and Kosi Diaras were also decided upon. If all these schemes bear fruit then something like 1,05,00,000 maunds of additional Food grains can be had to the Provincial Food Economy.

In the recent past Government of Bihar had further accelerated the pace of paper planning in the matters of Food Production and finally decided to reclaim something like 7 lakh acres of Waste land in the various regions of the Province.

The Waste land will be given to the refugees to colonise the areas. Cultivation will be done on cooperative basis and mechanical equipment will be provided by the Government. This Scheme if successful will reduce the annual Food Shortage of Grains by 3½ lakh tons which was the total deficit of the Province of Bihar in 1946.

There are varrous major and minor irrigation and Electricity projects. These projects will bring fundamental changes in the Economy of the Province. The Damodar Valley Project, The Kosi Project, The Gandak Project, are major projects. Eight Dams on the river Damodar and its tribulations when completed will irrigate about one lakh acres of land in South Bihar. It will generate electricity of highest power which will be utilised in generation of power for various industries of Bihar. Kosi project will also irrigate and provide electricity to the vast areas of North Bihar. The Gandak project will be able to irrigate about 30 Lakhs acres of land in the District of Saran, Darbhanga, Muzzafferpore and Motihari. These major projects will cost a huge sum of money. The Gandak project alone will cost Rs. 11

crores for its execution and will be complete in about 6 years time.

There are other minor projects known as Tilaiya and Konar Dams, Panchat and Maithan Dam, Sakari Canal and Baya Nalla channel. A masonry Dam on River Panchane near village Giriak in Patna District is also proposed to be constructed. The now defunct Chorusa channel is to be revived which will irrigate about 40 thousand acres. The revival of "Baya Nalla" is expected to benefit an area of 96 thousand acres at the cost of nearly half a crore of rupees. The Sakari Project will irrigate about 50 thousand acres in the district of Monghyr. New Anicut on Sone replacing the old will benefit the districts of Gaya, Arrah and Patna. Its cost will be about 4 crores.

Execution of all these Plans and Schemes will require a huge amount of money. How to finance them? This is very easy provided the Food Ministry of the Province creates a confidence among the masses that these schemes will not be paper plans; rather they will be given concrete shape and will be of benefit to the people. If such assurances, not by false promise but by deeds, are given to the people, money will be coming and pouring like water. If Government floats Agricultural Development Loans, then it will have no difficulty to raise the amount to finance the schemes. For the present those agriculturists who will be financing the projects by purchasing the development loans should get the improved seeds through the Credit Agricole on credit to be repaid after the harvesting season. Every unit of 25 villages should have a Credit Agricole with Sales Depot attached to it to give all sorts of facilities to the cultivators.

Every province has done remarkable progress in the field of mechanical cultivation with the exception of our Fair Province Bihar. An area of 1,20,795 acres of land has been brought under cultivation by the use of tractors by almost all the eight provinces of the Indian Union. Bihar is not in the picture. In C. P. also some 8000 acres of land have been reclaimed. But in our Fair Province, no plot, what to speak of acre of land, has been brought under mechanical cultivation.

What is the present need of the hour?

The solution of the problem lies in developing minor irrigation projects in the immediate present. A band of selfless social workers must also be conscripted to help the various schemes of Finance, Credit Agricole and Sales Depot. The supply of tractors on hire, as is being done in some Provinces, should be experimented upon. Thus, the supply of tractors on hire, seeds on credit, manures on reduced prices and other facilities without any let or hinderances will create a sort of confidence in the mind of the masses and will pave the way for the success of the long range plans of the Government.

This is not alone. Small and cottage industries should also be developed in the rural Economy so that the strain of surplus labour of 90 Lakh on the Agrarian Economy of the Province which is proving to be very irksome and battering and shattering the economy to pieces, may be eased.

Thus the development of Industrial and Agricultural Economy side by side will mean increased per capita income for the people of the Province. It will mean general progress, improved means of living and general rise in the standard of

the masses. For the present the picture is very gloomy and the sky of Economy is over cast with dark, threatening and thundering clouds, ever ready to engulf the large masses in the whirl-pools and eddies of starvation, ruin and misery. This is the picture of our entire Economy and with this we are faced and hence our spirit is dead and our looks are melancholy and haunted.

HARNESS THE LEGUMES FOR INCREASING FOOD PRODUCTION POTENTIAL

By: D. G. Dakshindas

THE increasing seriousness of Indian Food situation has now been very well realized by the Government and the people. To meet the food shortage, huge sums of money, which the present Indian nation can ill afford to spare, are being spent for importing food grains from abroad to meet the deficiency of food in the country. Economists are giving constant warning against this drain on national wealth and have been emphasizing that this drain must stop and India must at any cost be able to produce her own needs in food. Recognising this need, both Central and Provincial Governments are formulating and also working out plans for agricultural improvement in order to increase productive efficiency. The present food shortage has been mainly due to increase in population, continuous crop failures in various parts of India and, most important of all, due to low yields.

Two most important of all the remedies for increasing the food production are:-(1) Increase in the area under cultivation of food crops, and (2) the increase in the yield of crops. The first depends on the natural resources—the land and its availability—and hence the scope under this is limited. The step which will naturally help us, then, is towards increasing the yielding capacity of the land.

Ridiculously low yields of all crops in India is the main cause of food shortage. It is really unfortunate, that this country of ours which we describe as "सुजलाम् सुफलाम्" is the lowest in the rank in the world so far as average yield per acre of all food crops is concerned.

Nitrogen and Organic matter Deficiency

Indian soils being continuously cultivated for long almost without manure, have reached the lowest limit of productive capacity. The main deficiency is of nitrogen and organic matter. It is recognised all over that if fertility of Indian soils is to be restored, liberal supplies of organic matter and Nitrogenous manures must be added to the land. The sources of organic manure are very much limited. According to Professor A.V. Hill, "In India owing to the almost complete lack in rural areas of alternative fuel, about 40% (65 million tons dry weight) of the total amount of cowdung produced is collected and burnt. The balance is either lost because of difficulties of collection or is uneconomically applied chiefly through lack of compost". An appre-

ciable quantity of organic matter can however be made available if town refuse and village refuse composting is resorted to on a large and wide scale.

The lack of nitrogen is recommended by many to be met with by the application of artificial nitrogenous fertilizers. Though this is one of the remedies, use of artificials will solve only a small part of nitrogen-deficiency and will also entail huge cost. The maximum pre-war usage of sulphate of ammonia, the only widely used artificial nitrogen fertilizer, was only 20,000 tons. Since then, however, greater steps have been taken to increase its use. Two factories are being opened in India. According to the Food Minister's recent statement in the Parliament (on the 18th Feb. '49) 61,500 tons of ammonium sulphate are manufactured in India, while imports from July 1947 to June 1948 amounted to 1,18,000 tons. An idea of how much more of Nitrogen, however, will still be lacking can be had from the following figures.

Fertilizer consumption in different countries in Lbs. per acre :—

	Nitrogen		Nitrogen
India	0.1	Germany	26.4
Egypt	3.0	France	6.9
U.S A.	2.2	Denmark	13.6
U.K.	8.8	Czekoslovakia	3.6
Switzerland	7.0		

Use of artificials however is bound to be a costly proposition. Professor A.V. Hill, in his report, says:—

"The production of 350,000 tons of sulphate of ammonia per annum now being planned will grow only sufficient crops to feed about one year's increase of population. We judge from the report of the recent technical mission which has investigated this matter that a ten-fold expansion of manufacture in India on this initial production as a basis within 7 years would involve more difficult problems than could be solved within that time. For any Scheme which involves the use of artificial Nitrogenous fertilizers on the scale we have considered, the importation of substantial quantities of these must therefore be envisaged until such time as Indian production can meet requirements. At the present time, it is impossible to say from where supplies on this scale could be obtained, but failing importation of fertilizers much greater tonnages of food grains will have to be brought in from abroad."

Nitrogen Economy of the Soil

No figures are available in India which will depict a picture of nitrogen economy of Indian soils. Lipman and Conybeare (1936) have presented a valuable inventory and balance-sheet of nitrogen budget of the United States. The losses through harvested crops, erosion, leaching and grazing and animal removal, as well as the gains through manures and fertilizers, rain fall, and irrigation, symbiotic and non-symbiotic Nitrogen-fixation, present a balance which show a net annual loss of 7.21 million tons of nitrogen or in terms of ammonium sulphate-a loss of 35 million tons annually.

Commenting on these data, Wilson says that the data offer striking confirmation of the little recognised fact that commercial synthetic nitrogen represents only a potential escape from the nitrogen starvation that may ultimately confront the world. The present consumption of inorganic nitrogen compounds amounts to less than 2% of the total nitrogen added to the agricultural area.

It appears then, that most of nitrogen must come for many years at least from sources other than commercial fertilizers. In contrast to the relatively small quantities of nitrogen added to the soil in the inorganic form, atmospheric nitrogen fixed by living organisms accounts for 60% of the total nitrogen returned annually to the agricultural area of the United States. According to Prof. Wilson, increase of the supply of nitrogen through wide-spread use of legumes offers one method of offsetting those losses that will persist inspite of wisest land use.

It will thus be seen that any increase in the consumption of artificials will not finally solve the problem of nitrogen deficiency. Moreover it is questionable whether large scale application of ammonium sulphate to Indian soils will be advisable. Long-term experiments on paddy soils in Burma have definitely shown that continuous application of ammonium sulphate has resulted in reduced yields and injury to the soil.

Leguminosae and its Importance

It is wise, then, that we attempt the natural way and take advantage of Nature's gift in the form of Leguminous plants and harness them to build up the nitrogen economy of Indian soils. In the Agriculture of most ancient civilizations like the Greek, Egyptian, Roman, Chinese Indian etc., legumes have always formed an important part in the cropping systems practised.

The value of leguminous plant lies in their ability to fix the free nitrogen of atmosphere and accumulate it in their root-nodules in appreciable quantities with the help of some useful micro-organisms who live in symbiosis with the plants. Nature maintains the nitrogen status of the soils through its leguminous plants; for we know that the leguminosae is the 2nd largest family with no less than 10,782 species described in 487 genera, the largest of all the families being Compositae containing about 800 genera and 12,000 species. On virgin soils, leguminosae constitutes a considerable portion of the vegetation and plays a part in building up soil fertility. According to Campbell (1927) the relative abundance of Leguminosae in any wild association of plants constitutes an ecological index to the fertility of the soil.

Taking cereal and other non-leguminous crops continuously from the land will naturally result in the depletion of soil fertility, for such crops only remove large quantities of nitrogen and other food elements without returning any. Cereals have been rightly described by Shultz-Lupitz as "nitrogen consumers" and leguminous crops as "Nitrogen accumulators". Various legumes differ somewhat in their ability to fix atmospheric nitrogen and in increasing the nitrogen status of the soil. From various reports it appears that Nitrogen fixed in a single crop averages a figure somewhere less than 100 Lbs. per acre. Loehnis gives an estimate of this figure to be about 60 lbs. per acre.

Legumes thus are a very useful plant species which instead of depleting the soil, help in increasing its nitrogen status while deep going and fine roots increase the organic matter content of the soil and thus improve its physical properties. While cereals supply us with our requirement of starch and carbohydrates, legumes supply us the valuable proteins. A proper combination of legumes and cereals in the cropping

system of agriculture will not only help in maintaining the high fertility of the land, but will also help us in obtaining a balanced diet.

The use of legumes can be made in the following four ways :-

1. Alternate Husbandry
2. Crop Rotations
3. Green Manuring
4. Mixed Cropping

Ley Farming :- The system of alternate husbandry or ley farming, as it is some-times called, is a very common practice, now-a-days in the agriculturally advanced countries and consists in growing grasses in combination with legumes on a piece of land for 2 to 3 years duration. The inclusion of legumes affords a protein-rich fodder which helps the cattle feeding on it in producing larger milk yields of higher biological value. Grasses and legumes-combination also increase the organic matter content of the soil, improve its physical structure and also accumulate soil fertility for succeeding cash or cereal crops. When such leys are broken up and cereal crops are grown on them, higher yields can be obtained. It is necessary that such a practice be followed in Indian fields particularly where enough moisture can be made available.

Legumes in Crop Rotations :- The value of leguminous crops in crop rotation is already well established. Growing the same cereal crop continuously on the same land reduces soil fertility, increases toxins and ultimately results in low yields. The legume, if included in crop rotations, removes the toxic substances, increases the nitrogen status of soil by fixing atmospheric nitrogen thus helping in maintaining and rather increasing yields of the cereals or cash crops. The excess of nitrogen which is fixed by the legume from atmosphere and which remains in balance after the nitrogen need of the legume is fulfilled, is returned to the soil in organic form which on nitrification becomes available to the succeeding crops. Since most of the leguminous crops are deeprooted their inclusion in crop rotations results in water economy, the soil nutrients are brought up and larger quantities in easily available forms are supplied to the succeeding cereal or cash crops through the decomposition of legume roots. Experiments at Pusa Institute have shown that growing of a legume like berseen develops a stable type and high degree of soil fertility for the succeeding cereal crops and that higher yields of wheat could be obtained for 3 to 4 years, than when wheat is grown continuously.

Amount of Nitrogen added through Green Manuring :- Green manuring, that is, turning into the soil of green crops is a potential source of adding organic matter to the soil—particularly in the sub tropics. Use of leguminous crops for such a purpose has many added benefits. The amount of Nitrogen when turned under represents both taken from air and from soil. A legume thus not only returns what it takes from the soil but also gives back all nitrogen that it fixes from the atmosphere. Relative amounts are difficult to be determined but it is estimated that on an average about 2/3 of nitrogen in a legume comes from the air and 1/3 from the soil. American workers estimate that amounts of nitrogen added by such green manure crops as hairy-vetch, crimson-clover or sweet-clover, would be equal to the application of 600 to 800 lbs. of nitrate of soda per acre.

Other Benefits of Green Manuring :- Availability studies of leguminous green

manures indicate that 50-80 % of the nitrogen is returned in the first succeeding crop. The residual effect lasts for 2 to 3 years but with decreasing efficiency. The nitrogen of a green manure is said to be much more readily available to the succeeding crop than that of stable manure. The rate of nitrification is greater in soils on which a legumes crop has grown. This stimulation of nitrifying bacteria is a fortunate fact which may in part account for the high value of leguminous green manuring.

Other benefits accruing from green manuring are :- Increase in availability of other elements like P and Ca, improvement in physical structure of soil, suppression of weeds, change in soil reaction, conservation of soil and its nutrients, preventions of losses through leaching etc.

Extensive experiments in India have conclusively proved that, provided sufficient moisture is made available for the proper decomposition of the burried crop, substantially high yields are obtained from crops that have been green manured. It is necessary, therefore, that the cultivators may be appraised of the benefits of increasing their food production through this cheap and easy way of green manuring.

The Secret of Mixed Cropping :- The value of leguminosae in agricultural production does not only lie in the availability of the nitrogen gathered on its being turned under. After much controversy in the last two decades, it has now been established that even during its life-cycle a leguminous plant excretes much of its nitrogen fixed from atmosphere into the soil in the form of organic compounds like aspartic and other amino-acids, and also that most of the non-legumes when grown in association with legumes under favourable conditions are also able to utilize these organic nitrogen-forms for their nitrogen-nutrition. This is an advance in the original idea that plants are able to take the nitrogen from soil only in inorganic form like nitrates. The protein rich fodder produced in the mixed pastures in western countries are due to the high protein content of the grasses made possible through the supply of nitrogenous compounds-by its legume-associates. The yield of the forage is also increased through the inclusion of legumes in seed moistures.

The system of mixed cropping is widely practised in India and has been an important feature of all old agricultural civilizations. It is rather surprising that much investigations have not been made in India on such an old established practice. The reason why Indian soils have not lost their fertility completely may in part be due to this system of mixed cropping—the leguminous component helping to maintain soil fertility. Crop mixtures such as wheat-grams, barley -peas, tuar-cotton, etc., are prevalent cropping systems in India. Such mixed crops, in addition to maintaining soil fertility, are a guard against total failure of harvest due to unfavourable seasons, particularly some produce is obtained from the small holding obtaining in India. It has already been shown that legumes increase the quantity of available K, P and Ca due to their deep-rooted systems, the fodder value of the mixture is increased and the soil erosion is reduced. In mixed crops with different root habits the plant food is utilized to the best advantage and there is no competition. Mixtures also furnish protection to other crops, e.g., Juar protects cotton from hot winds in Punjab

Need for Experimentation

All the legumes do not increase nitrogen content of the soil. Howard says that Java-Indigo depletes nitrogen supply in the soil. Selection of proper leguminous crops is, therefore, essential. Similarly it is now known that legumes respond to Phosphate manuring in increasing yield of the fodder and its calcium and phosphorus content and in building up soil-fertility. But in this case also, all legumes do not respond equally. Herein comes the importance of choice of legumes suitable for the purpose under view. This can only be done by systematic trial experiments located in different regions distinguished by soil and climatic conditions.

The above discussion will show the importance of increasing the area under leguminous crops under various cropping systems. The secret of the pre-eminence of legume plants in respect to food value lies in their chemical composition. The seeds of leguminosae as compared with those of cereals are rich in reserve proteins. The plants are richer in Ca and Mg and slightly more in K and P than cereals. Ca is specially significant in nutrition and in part accounts for the good results of feeding leguminous products to the stock. Iodine is another mineral element recently reported as occuring in significant amount in the leguminosae.

From the economical as well as nutrition points of view, leguminous plants are great benefactors of man. Realize their importance therefore, and *"Grow More And Better Food Through Growing More Legumes"*.

COMPOST MANURE FROM WATER-HYACINTH — A PESTILENTIAL WEED

By: P. Padmanabha Iyer

SOIL surveys, conducted in different parts of the country, unmistakably show that the littoral tract, in particular, is deplorably deficient in humus (organic matter). The effects of humus on soil and plant conditions are as numerous as they are intricate. The classical researches of Colonel Mcarrison, the Nutrition Expert, and Dr. B. V. Nath, the late Imperial Agricultural Chemist, in India and those of Mockeridge and Bottomly, in Europe and of Clarke and Roller in America, have conclusively proved that crops, raised with organic manure, are pre-eminently superior in their nutritive value to those, raised with artificial fertilisers and that seeds produced from field, treated with organic manure, possess greater germination power than those obtained from lands, manured with artificial fertilisers. Improving the texture and water-holding capacity of the soil and providing food for the innumerable and invisible organisms, inhabiting the soil, known as bacteria, are the benefits, which organic manure confers on plant growth. In addition to these indirect advantages, organic manure appears to give plants a better, balanced nutrition and provide certain nutritive factors, which chemical fertilisers either do not supply or supply only imperfectly.

It has been estimated that seventy-five per cent of fresh organic matter added to the soil and thirty per cent of the stabilised humus are destroyed annually in a tropical country, like India.

From a consideration of these facts, it is clearly perceptible that the constant and correct maintenance of organic matter in the soil is supremely important and indispensable.

The humus content of the soils of the littoral area, mentioned at the outset, can be enhanced in a variety of ways, such as the application of cattle manure, green leaf manure, oil cakes, etc. But, as ill-luck would have it, these materials are not available adequately in the said regions. The present phenomenal rise in their prices, combined with the considerable difficulty and expense of conveying them from places, where they are abundant, has to be reckoned with. Hence the imperative necessity for detecting and tapping profitably, sources of organic materials in the tract itself. The water-hyacinth, which is a persistent and pestilential weed and which grows with amazing rapidity and prolificity in ponds, rivers, lakes and channels, is an excellent and inexhaustible source, existing in contiguity to the tract. Its dense vegetation seriously impedes the flow of water, blocks up tanks, and obstructs even navigation. It also harbours the varieties of mosquitoes, carrying the germs of Malaria and Elephantiasis. Like the *Rakshasi*, Surpanakha, the sister of Ravana, who transformed herself into a damsel of bewitching beauty, to captivate the heart of even Sri Rama, the uncompromising monogamist, the plant enchants all by its pretty, blue flowers and bladder-like, turgid stalks, while nursing in its bosom, noxious insect-vectors of infectious and insidious diseases. It originally came from Brazil. Hence it is also called "The Brazilian Blue Beauty". It is found growing rankly, in and around the succession of canals and backwaters, which is a peculiar geographical feature of North Travancore and Cochin. It is also reported that it has become a serious menace to Public Health and Navigation in Bengal, Assam and several other parts of India.

The plant lies low during the hot season, when the water in the lakes and canals becomes saline, and rears its mighty and magnificent stature, when the monsoons burst, causing freshets and making the waters of lagoons and canals sweet. Attempts to destroy it by poisonous sprays have proved abortive. The efforts of the Departments of Public Health and Public Works to eradicate it by collection, removal and burial, have also been infructuous so far, thanks to its fecundity and tenacity. No wonder, therefore that the weed is called "German Pola" in Malayalam by the local people!

The Bio-Chemical section of the Travancore Agricultural Department, which has been mainly engaged in the task of preparing compost out of town-refuse and night-soil in the various Municipalities of the State, has in view of the acute food situation and the consequent imperious necessity for augmenting the production of food crops by sufficient and efficient manuring, now turned its attention to devising methods of making compost manure out of this villainous and proliferous Water-hyacinth, which, as already described by me, has been giving a headache to the Public Health and Public Works Departments for a long period of time.

Soil Requirement

Even though paddy can be grown in a variety of soil including salt land, the best soil for paddy cultivation is clay-loam. It should contain, (on physical analysis) - clay 45 parts, fine earth 45 parts, sand 5 parts and organic contents 5 parts.

It is customary to grow paddy on the hill slopes putting terraces at convenient places. The paddy fields generally lie in the shallow portion between two hills. These fields are bunded so that they may hold water. To take the water in or to let the excess water out, they are provided with sluices. The bunds are generally made of earth or of stones where the depth of the soil in the field is very low. The bunds occupy a great deal of area. In order to save the area it is advisable to make a contour survey of the entire field and arrange bunds according to contour line. This will also save undue labour or repairs of the bunds.

Description of the Plant

Paddy belongs to the Gramine family. It is closely related to the wild rices (zizania). Paddy is an annual. The root system is fibrous and shallow and the culms average 4 to 5 feet in height. Like other cereals paddy tillers abundantly under favourable conditions. The flowers are produced in panicles which are rather compact and the one-flowered spikelets are borne on short pedicels. The outer glumes are short scales; the flowering glume is sometimes awned, and the palea makes up the hull or husk which envelops the kernel and remains attached to the grain in threshing. The grain is called 'rice'. The leaves of the plant are yellowish green in colour in general while when the plant is in vigour the leaves become dark green. When the crop is ready for harvest, the entire plant with the leaves and earheads becomes yellowish.

Classification

Paddy can be classified in three ways:-

(1) Fine Paddy and Coarse Paddy
(2) Early Paddy and Late Paddy
(3) Dry Paddy and Irrigated Paddy

There are different varieties and in each type of paddy there are improved strains.

Paddy is cultivated in three different ways:-

(1) Sowing by seed drill—followed in Gujarat, Deccan, also in U. S. A. and Italy.

(2) Sowing by broadcasting the sprouted seed—Especially in salt land cultivation.

(3) By transplanting seedlings after they reach a height of about 6" to 9".—All over Konkan and other parts.

The third method will be discussed here.

Culture

Paddy is a crop with a shallow root system and hence too deep ploughing is not necessary. When the rains set in and soil becomes sufficient loose plough-ing is done with a light plough. Due to puddling, the soil in the field becomes very hard after the harvest of paddy and it becomes impossible to plough the land with the bullock power before monsoon. However, this difficulty must be overcome. Tractor ploughing is the only remedy that is feasible. If the land is ploughed in summer, after the harvest of pulses which is a secondary crop after paddy, the land will be exposed to sun and will largely improve in its

texture. At the same time, micro-organic activity will be increased and soil will become more porus. Moreover, the surface soil will be changed. All this will tend to increase the production of paddy per unit area atleast by 15%.

After the first ploughing is done, the field is filled with water to a height of about 12" (by the down flowing monsoon water). This kills the weeds and the soil remains loose.

The seed-bed for raising seedlings is generally rabbed. Rabbing is a process of burning soil to a depth of about 3" by means of cowdung loppings or grass. Various experiments conducted by the Department of Agriculture, Bombay, clearly indicate that this is a wasteful process. If the material used for burning the soil is turned into manure the production will increase to atleast 10% and the field will be rendered more fertile permanently. Instead of rabbing it is advisable to sow the seed on a good land and apply fertilizers or fish manure. Fish is found to be the best of all manures and fertilizers in case of rice seedlings.

Cultivators claim that owing to rabbing the seed-bed is rendered weedless and also fertilized by the ash content. Besides, the uprooting of the seedlings is facilitated by the process of burning. There is a lot of truth in the claim of the cultivators. But all these advantages can be claimed by another method which is more suitable and productive.

The seed should be sown in lines by means of a seed-drill and groundnut cake be applied at the rate of 2 parts of cake with 1 part of seed by measure or by weight. If fish is available it may be applied with the same ratio as ground-nut cake. Fish helps tillering process more than any other manure. Loosing of the soil to facilitate uprooting of the seedlings can be obtained by applying a little of sulphate of ammonia with either fish or groundnut cake.

To transplant an acre of land 25 to 40 lbs. of seed is necessary. seed-bed area may roughly be taken as 4 to 6 gunthas to sow 25 to 40 lbs. of seed. The practice of sowing 80 to 100 lbs. of seed (about 1 to 1½ maund to an acre) should be discouraged. Practice of sowing less seed per acre has without doubt been proved to be very efficacious. It is estimated that only in the Province of Bombay due to higher seed rate there is a waste of about 44,000 tons of paddy every year.

The seed should be sown before the seed-bed gets too wet. The heat of the soil (known as 'Vapsa') greatly helps germination. Within three to four weeks the seedlings are ready for transplanta-tion. Early varieties should be transplanted first, then follow the mid-late and last, the late varieties.

Transplantation

It has been observed that there is a co-relation of the time of transplanting to the life of the particular variety. If a variety matures in four months after sowing the transplanting should be over within four weeks after sowing. This gives the best results. However, it is not always possible to work accordingly. Rain is a determining factor. Yet, it should be attempted to finish the transplanting as early as possible.

Before transplanting, paddy fields are required to be puddled. Ploughing should be done again length and breadth wise and fine puddle should be prepared. A plank should be run over and the field

Experiments for the purpose were designed and carried out at Alleppey, which is right in the midst of an exuberance of water-hyacinth.

The high moisture content of the green water-plant, viz., 95.40 per cent, retards decomposition. Hence, in addition to starters, like cow-dung or night-soil, for multiplying and stimulating the bacteria, which disintegrate it, materials for absorbing the moisture, had to be employed. Though both dry ash and red earth were found to be suitable absorbents, the latter had to be eliminated, owing to the prohibitive cost of transport. Ash alone was added. Let me now describe the process of composting and the results.

Water-hyacinth was used on the third day, after it was transported to the site. Two days were allowed to elapse for its moisture to drain away. The weed was spread in layers of about 8" thickness, 20' length and 6' width. As each layer was put on, 2 inches of moist cowdung and 2 inches of ash were spread evenly over it. A second layer of water-hyacinth was put on and again layers of cow-dung and ash were spread over it. This procedure was continued, till the heap attained a height of about 3 feet. The heap was then lightly covered with earth and left for 4 weeks. Active fermentation set in and the water-hyacinth was broken down into a moist mass. At the end of the 4th week, the heap was turned over. By the end of the 8th week, the decomposition was complete, and the water-hyacinth was converted into finely divided organic matter, looking like moist leaf-mould. The substitution of night-soil for cow-dung also gave excellent results. It was considerably cheaper, into the bargain. But it could be employed for composting only on sequestered sites, situated far from towns, since its smell would be quite disagreeable to the public.

I shall now give the results of analysis of compost manure, prepared out of water-hyacinth. I am also furnishing the composition of ordinary cattle manure for comparison :-

	Moisture	Nitrogen	Phosphoric Acid	Potash
	%	%	%	%
1. Composted Water-hyacinth	50.0	0.56	0.39	2.95
2. Cattle Manure	56.0	0.60	0.40	0.99

It can be clearly seen therefrom, that compost manure from water-hyacinth is on an equal footing with cattle manure, in respect of the ingredients of Nitrogen and phosphoric Acid and that it is superior to the latter, in regard to Potash.

Experiments on economising expenditure for preparing the compost are also being designed. Dr. C. N. Acharya, Chief Bio-chemist, Ministry of Agriculture, Government of India, very recently suggested the following cheap method. It will be tested and the results published, in due course.

The water-hyacinth can conveniently be composted on the sides of canals, tanks, or back-waters. The composting is best carried out in over-ground heaps. Each layer, a foot in thickness, may be sprinkled over with cow-dung emulsion or slime emulsion from the tank or canal bed and the heap, (say, six feet broad and fifteen feet long), may be raised to a height of 4½ feet and allowed to dry out for a fortnight. This will remove the excessive moisture present in the material. At the end of a fortnight, the material can be covered with a thin layer of earth and allowed to rot for a period of about three months, after which it will be ready for application to the lands.

The scheme is of great utility, as it places, within the reach of the ryot, adequate and rich organic manure during the present critical food situation, confronting the state, when the output of food crops has to be enhanced by prompt and proper manuring and as it removes and renders not only innocuous, but also useful, the pestilential and pertinacious water-weed, which has developed into a dreadful menace to public health and a formidable obstruction to navigation.

CULTIVATION OF PADDY AND MEANS TO INCREASE ITS PRODUCTION

By: G. S. Barve

THE total world production of paddy exceeds all other food grains. More than fifty per cent of the world population depends on it. India being one of the most important Paddy producing countries, rice forms the staple food of a large percentage of her population. The importance of the cultivation of paddy and finding out means to increase its production within easy reach of the common cultivators, has largely increased due to food shortage. The ceasure of the imports of rice from Burma to our country during and after the last World War has also given an impetus to its production. It is intended here to give an account of the cultivation of paddy on improved lines and suggest means to further increase its production per unit area.

Climate and Rainfall

Paddy is a crop of the temperate zone and hence it prefers warm and humid climate. Obviously, China, Japan, Indo-china, Phillipines, Burma and India produce almost 90% of the world output. The minimum rainfall for paddy should be 35" to 40" while anything upto 200" will grow it well. However, the rainfall should be as distributed as possible during the rainy season. The zones where the rainfall is less than 40", often require canal or well irrigation to supplement the rain water. Paddy is a semi-acquatic (water loving) crop and right from transplanting to its inflorescence requires water to a height of about 9" in the field. However, stagnant water will not enhance its growth. It should be kept flowing from one field to another. This arrangement helps aeration and supplies some organic manure which flows down the hills with the rain water. In Italy, where the per acre paddy yield is highest in the world, arrangement is made to empty the fields of water and fill them again with fresh water and keep it flowing. The range of temperature for paddy during its growth should be from 80° to 100° F., while after inflorescence, for best fertilization, the temperature should be from 90° to 100° F. Paddy does not grow well as a Rabi crop and hence the yield of paddy grown in the Rabi season is much lower than that grown in the Kharif season.

In the Bombay Province every district grows paddy to some extent but more than 50% of the total cropped area under paddy is claimed by Thana, B. S. D., Kolaba, Ratnagiri and Kanara districts – the total area being 2093000 acres (1945-46).

rendered level for transplanting.

Seedlings should be uprooted and washed clean of mud and brought to the field. The washing of seedlings is necessary only if the seed-bed is far away from the field. Otherwise the seedlings can be got rid off the soil sticking to its roots merely by beating them lightly against a V cut piece of a branch of any tree.

The seedlings should be transplanted at a distance of 9" planting two to three seedlings in a place. The spacing largely depends upon the fertility of the soil. If the soil is very fertile the distance be increased as the seedlings tiller profusely. Seedlings establish in their new place within a couple of days.

Manuring

In many places paddy crop is not manured at all but manuring is quite essential. By adding adequate supply of manure the production increases by 50%. The best practice is to divide the total manure content in two doses. The first dose is given at the time of transplanting and the second a week before inflorescence sets in. In aggregate, 300 to 400 lbs. of groundnut cake per acre is adequate. It should be remembered that the original fertility of the soil has to do a great deal in deciding the manurial doses. If sulphate of ammonia is available it should be given with the groundnut cake, the cake in that instance being reduced to only 200 lbs. (Sulphate of Ammonia being 100 lbs.).

Nowadays another special manure is sold by the Bombay Government known as Manure Mixture. It is also given at a concession price for food grains cultivation. It contains all the essential elements as Nitrogen, Potash and Phosphoric acid and becomes readily applicable to the plants. It should be given on an average 250 to 300 lbs. per acre being divided in two doses.

Weeding

About a month after transplanting weeding becomes essential. While weeding, mulching is also done automatically, as the soil is very loose. It is a practice of burrying the weeds in the field which should be encouraged as it forms green manure. The second weeding is sometimes essential a month after the first weeding. It is needless to say that clean fields produce more corn than weedy-ones.

Tillering starts three weeks after transplanting and if manure is applied there is profuse tillering.

The bunds should be kept clean of weeds also. If the bunds are covered with vegetation, rats bore holes and store the earheads there. This causes a great damage. Rats may be killed by poisoning them with stomach poisons such as Lead-arsenate or Paris green. But, if it rains the poisons become dilute and are rendered useless.

Harvesting

The life of the paddy crop depends upon its variety. There are certain varieties which finish their life within 60 days and others which finish in 180 days. However, most of the varieties require 4 to 5 months. When the earheads droop down and the plants become yellowish harvesting should be done. It is done by means of a sickle cutting the entire plant, leaving about 3" to 6" of the portion from the soil surface. Then the harvest is spread in the field for drying for a day or two and then tied into bundles and carried or carted to the threshing yard. The bundles are arranged in a stack with a slope

on the top so that if it rains, the rain water may not enter the stack but flow down.

Yield

Yield is co-related with the life of the crop. The varieties which have longer life yield more per unit area than those which have shorter life.

Early varieties yield on an average 1200 lbs. of paddy per acre, the mid-late yield about 1700 lbs. and the late varieties yield 2250 lbs. per acre. But with the addition of adequate quantity of manure and improved strains of paddy being replaced for the local varieties, the production can be increased by atleast 70%

Yield per acre in lbs.

Italy	4568
Japan	3434
Egypt	2998
China	2433
U.S.A.	2185
India	1240

Note: The figures are taken from the Statistical Year-Book of the League of Nations, 1933-34.

(In the Bombay Province the standard normal yield per acre varied from 1440 lbs. to 800 lbs. in the year 1944).

Varieties

Research work in Paddy is mainly conducted to evolve (1) high yielding strains (2) Non-lodging strains (3) for superior grain and also for non shreading strains.

The following are a few strains evolved to suit the conditions in particular districts of the Bombay Province.

Strain	Approximate duration of crop in days	Average acre yield in lbs.	Suitable to
Z 31	125-130	2400	Thana, Kolaba & Surat Districts.
K 42	145-150	2800	South Thana and Kolaba.
Patni 6	100-105	1700	Devgad, Malvan & Vengurla Talukas of Ratnagiri District.
Waksal 207	120-125	2000	Northern half of Ratnagiri District.
Bhadas 79	135-138	2200	Lowlying fields of Ratnagiri District.
Mugad 161	141	2484	Uplands throughout the Malnad Tract.
Mugad 81	146	2514	Midlands of Belgaum & Dharwar.
Mugad 141	155	2728	Lowlying lands throughout Malnad Tract.
Antarsal 200	156	2556	Lowlying lands in Malnad Tract.
Maskaty 1315	124	1400	Highlying lands of Coastal Tract of North Kanara.
Halga 244	144	1980	Lowlying areas of Kumta & Honavar Talukas of North Kanara.

(These are a few of improved strains.)

Improved strains on an average yield 20% more than the local varieties.

STEPPING UP THE PRODUCTION OF FRUITS AND VEGETABLES IN INDIA*

By: S. S. Bhat

"GROW More Food and Grow More Fodder" is the resounding slogan to-day everywhere in India. This whole country is faced with a serious situation brought about by the scarcity of these essential requirements. We, in the Gujarat and Saurashtra areas, are in the grip of a famine and need to act upon the slogan, more than anywhere else.

Scarcity and famines are not new to this country. For centuries our masses have been underfed and our cattle famished. Our lands and rivers, our soils and climatic conditions have proverbially been our rich heritage, that has been bountifully bestowed upon us by Mother Nature. Millions of our rural population are idle for most part of the year. It therefore sounds as a fallacy that a country so richly endowed by nature as India should at all suffer from want, and that of food and fodder for the children of the soil. The reason is not far to seek if we only remember that our natural resources have remained miserably undeveloped and no serious attempt has yet been made to coordinate land, labour and capital in this unfortunate country – thanks to our foreign masters, our erstwhile Ma-bap Sarkar.

With the dawn of freedom, our national Government has rightly seen the gravity of the situation and has taken up rural development activities in all earnestness. At last, we find ourselves in great hurry to speed up production of essential commodities. Unfortunately, the production of food from the soil is largely controlled by the vagaries of the season and in order to minimise their hold on our fortunes, it is essential to increase irrigation by damming our rivers and sinking more wells wherever possible. Damming rivers and sinking wells all over the country is a matter of time and effective results can be expected in no great hurry. How I wish we had awakened to the possibilities of our natural resources with a view to avoid recurring famines, and eventualities such as of the present juncture, some decades ago! But that was not to be. We are now atlast in a great hurry to speed up production by sinking wells – and thousands of them all over the country when the house is caught by the blazing fire of hunger.

Growing More Staple Crops and producing more grain are indeed our first essential. But grain alone is not enough. The increase of our irrigation facilities – slow though it may be – should be taken advantage of fully. Fruits and vegetables are crops which essentially depend upon irrigation and repay the labour and capital invested on them substantially and over a long period. They are, moreover, indispensable for the promotion of our national health and longivity of life. The production of fruits and vegetables and therefore their consumption in this country, is miserably low – not more than about 30% of our minimum requirements. The production of food grains should, therefore, be encouraged simultaneously with the production of fruits and vegetables which should not be relegated to a minor position. Especially so in an area like

*Talk Broadcast from the All-India Radio, Baroda, on 5-3-49. Courtesy-Station Director.

Saurashtra which chronically suffers from shortage of rainfall on which agriculture, in general depends. Trees and plantations are known to attract rain, and more of trees and plantations means more of rain and better agriculture.

The need to step up fruit and vegetable production in India has been recognised to be urgent for years past. Several suggestions in this regard have been made from time to time at conferences and meetings such as those of the Soil and Crops Wing of the Board of Agriculture in India, and the All-India Horticultural Workers' Conference. The reports of the Royal Commission on Agriculture in India (1928) and of the National Planning Committee (1946) abound in practical recommendations awaiting implementation. A review of these will be useful to guide our present and future course of action.

The production of fruits and vegetables may be viewed from two different angles. Firstly, the raising of crops which yield bulk kinds of food such as banana, papaya, potato, cabbage and all kinds of indigenous vegetables. Secondly, the raising of crops of rather more uncertain, but long-term nature such as mango, citrus, chiku, litchi and moringa. Though the latter group may be considered particularly valuable from the protective and vitamin points of view, the former group is no less valuable as the crops included in it add substantially to the country's total production of bulky foods, which is of immediate urgency at the present juncture. The programme of development for the country should, therefore, include the production of fruits and vegetables under both these groups for a sound national policy.

It is noticed further that in many regions of this vast country, production of certain crop is absent, just because no one has tried it. Once a new crop is attempted with success by some enthusiast, others follow suit and the crop spreads. Instances of new crops grown widely in this way are many, as for example the cultivation of Basrai banana in the Baroda district.

In introducing such crops, we should keep the motto "Grow more of what you can grow easily" before us. Crops like banana and papaya should be extended and introduced into new regions and in villages, where natural facilities of soil and water are favourable, but where they have not yet been tried on a sufficiently large scale, *Banana* and *papaya* are crops of undoubted economic benefit, and wherever they are grown, they have yielded high profits. They also require little technical skill and are marketable easily. Once the local cultivators are shown and convinced of their advantage they take up their cultivation which spreads remarkably fast as has happened in the Baroda district, where the acreage under banana and papaya has increased 400-500 per cent in the last decade.

Where possible, new varieties of fruits like grape-fruit, Italian lemon and grape should be introduced and grown. These crops can be raised easily in kitchen gardens and bungalow compounds in new colonies and town-extensions and help the country's total production substantially.

Then, there are vast ravine lands on the banks of rivers, which require to be surveyed. People should be encouraged to develop them. The progress is bound to be gradual, but the results that may be achieved will be substantial. Hardier

and long-term plantations of crops like mango, *jujube* and guava, may be raised in such lands, where no crop is taken at present. Government should give out these lands to enterprising cultivators free of charge, and should charge assessment only after ten years occupation, when the trees may come to bearing. This will bring new area under the plough without encroaching upon areas already under cultivation. Instances of ravine development can be seen at Ronoli and Haripura of the Baroda State.

As already mentioned above, most fruit and vegetable crops depend upon the availability of irrigation water for their success. The Government of the Indian Union as well as local Governments are launching large-scale schemes for sinking wells and the construction of dams. Under these schemes wherever new wells are sunk and new areas are brought under irrigation, Government should intensify their help to people to plant fruit and vegetables by providing them advice, plants, seeds and manures free of charge or at concession rates.

Oil engines and pumps should be imported or produced in our country in large number, and growers of fruit and vegetables should get priority for their supply on *tagavi* and easy terms of repayment where needed. The difficulty in securing oil engines to lift water has been lately one of the most serious handicaps in our attempt to extend fruit and vegetable cultivation.

The Dhari and Kodinar Fruit development scheme, which has been in successful operation in the Baroda State for the last ten years, provides a concrete example of what can be done if proper facilities are offered by Government to further the interest of the fruit industry. In the backward but fertile area of the Amreli district a survey of the soil and irrigation resources was carried out in 1936-37, and the Government offered the local growers to supply cheap plants raised in local nurseries specially started and run for the purpose. Culturable waste lands were offered to prospective growers free of cost and without any assessment at all for the first seven years, jirayat rate of assessment from the eighth to fifteenth year, and full Bagayat rate of assessment thereafter. A bounty of Rs. 20/- per bigha was also offered for new plantations raised within a specified period, regardless of whether the planting was done on newly acquired waste land or on land already held by cultivators. Intensive propaganda of the agricultural department coupled with the organisation of the growers into a Cooperative Fruit Growers' Association, accelerated the progress of the scheme in this area. The result was, in the words of a visitor, "the face of the country-side was changed from a barren looking tract into a thriving green stretch of plantations", within a period of only seven years. The scheme was originally applied to only two talukas as a trial measure. It is now extended to the whole district in order to meet the increased demand for its benefits from the growers themselves. It needs to be mentioned here that this success has not been attained without facing local opposition and lethargy in the first two to three years after the scheme was put into operation.

Various other measures have been proposed from time to time that may help to increase fruit and vegetable production in the country directly or indirectly. Planting of fruit trees on

road-side and village sites as well as on field boundaries; the provision of reliable nursery stock for planting; the improvement of orchard efficiency by better cultivation; manuring and fighting diseases and pests; the development of the canning industry; the improvement of the marketing and distribution systems; the organisation of growers for cooperative work; and many other suggestions have been made. It is not known how far any serious attempt has been made on implementing them and what results have been obtained in the practical field. Horticultural research takes time to produce results, and the best that we can do to implement fruit and vegetable production immediately is to launch an all-sided and vigorous campaign to extend planted areas and to increase production with our present knowledge of proved practical merit.

FISH PRODUCTION

By: Dr. S. T. Moses

Food Production

NOT long ago, a writer under the pseudonym 'Gem' in discussing 'Planning', in "The Times of India", said, "In any plan of economic betterment priority must obviously be given to satisfy the primary needs of the population, viz., Food and Clothing. From this point it is realised that food is India's headache; clothing is Pakistan's problem." Attempts to harness all the forces at the country's disposal are being frantically made to increase the production of food. Campaigns with the slogans 'Grow More Food', 'Grow More Vegetables', 'Dig More Wells', 'Use More Tractors', 'Reclaim Fallow Lands' etc., have stepped up agricultural production but still to meet even the partial demands of the growing population dependence is upon the imports from other countries. Locally therefore next to animal husbandry, there is only one source of food supply to supplement agriculture and that is Fisheries.

Fish and Nutrition

It is well-known that health is our greatest asset and the foundation of all health is a sufficient and well-balanced diet. Dr. V. K. R. V. Rao in 1939 estimated the total food supply of India including fish and found it inadequate to the dietetic requirements of the population. The daily supply per adult is 59 grammes of Protein, 31 grammes of Fat and 445 grammes of Carbohydrates which even on Dr. Aykrod's modest figure of 2600 calories per head results in a 10% deficiency. The serious shortage in the diet of the masses or even others is in 3 essential food factors—Proteins, Fat and Vitamin A. Fish contains all these 3 so much so that what an advertisement claims for fish diet that it is necessary for 'brains, health and economy' is true; Fish contains valuable Protein and Fat; it is also a source of Vitamins A and D – Vitamin B is found in fish roe – and of minerals like Calcium, Magnesium, Sodium, Potassium, Phosphorus, Chlorine and in the case of seafish—Iodine. This content combined with tastiness and ease of digestion makes fish a food of exceptional value, the invalid's first food and the old people's favourite. Fish is wholesome and nourishes without fattening and consumptives have been cured by a fish diet.

POPULATION VERSUS FOOD-SUPPLY

By: V. G. Ramkrishnan

THE long-term objectives of a Food Policy require consideration of the question of Population versus Food-supply. Though the Malthusian theory of the population is not now wholly accepted, yet there is no gainsaying the fact that there are definite limits to the augmentation of production and the full effects of a Production Policy require also a consideration of Planned Population policy. In the context of Indian affairs, the need for control of population and regulated parent-hood is all the more urgent in view of the illiteracy and ignorance of the vast majority of the people. The production potential and the possibilities of a higher standard of living are likely to bring down the population growth but they are largely in the realm of possibilities rather than actual achievements. So any long-term plan of India's food supply should be co-ordinated with India's increasing population.

It is therefore pertinent to inquire whether India is overpopulated and whether we should depopulate.

According to census of 1941, India's population was 389 millions, larger than that of Europe, minus Russia. In fifty years preceding that census, the population increased by 110 millions or 39%. This, by itself though large, need not make us conclude that our numbers are too large or our rate of growth too rapid. First, we are dealing with a fifth of the world's population occupying a subcontinent of 1.6 million square miles; secondly between 1891 and 1941 we expanded less rapidly than the peoples of many other countries. For instance, between 1870 and 1930 the population of India increased by 31%; that of Europe-minus Russia by 60%; and that of Japan by 113%. Finally some are optimistic enough to say that by proper exploitation of our resources, we could have afforded a greater rate of growth.

That our numbers are large and our rate of growth has been rapid, no one can gainsay. The points to be considered are the relation of our productive capacity and the scale of our reproduction. Our productive efficiency is seriously affected in every direction by the size and the rate of growth of our numbers. Reproductive performance of a population is commonly indicated by birth rate i.e., by the number of births per thousand, of its aggregate number. Our birth rate is 34 per thousand according to official records and they are however underestimated and a study of the life table population would put it at 40 per thousand. Any way our birth rate is very much higher (birth rate in England is 15.8). Whatever might have been the tempo of our growth in the past as compared with that of European populations, we are today on a quite different level of reproductive activity from what obtains in the West. But the birth rate is an imperfect index of the reproductive capacity of a people. It relates to the number of births in a year to the total population while only a section of the population is responsible for the inflow of new lives i. e., women in child-bearing ages who contribute to the growth of

population. So the ratio between total births and the number of child-bearing women in a community is important. In India, this rate known as the general fertility, was 177 in the year 1931. If we take births to married women only in the reproductive ages, our married fertility rate in 1931 was 222 (For England it was 123 in the same year).

The population of this country, left to itself, is bound to grow faster than it has done upto now and the change in the rate of growth may be pretty large. We are already pretty large in relation to our resources and the prospects of our being allowed to spill over to other parts of the globe are nil. We should decide whether we can leave it to be determined solely by the development of social forces or deliberately organise our efforts to shorten our growth in numbers. Our decision will evidently turn upon the contribution that further growth of the population can make to the expansion of our economy. In the short period the growth of population may increase employment and output by stimulating consumption and investment at the expense of hoarding. We have in our community large hoards of barren money and exclusive unemployment in agriculture and cottage industry. But our hoards are kept for reasons which cannot be modified by the growth of population, while our unemployment is of a kind which can only be aggravated by it.

Most people who are complacent about the future of our population pin their faith on industrialisation as a solvent of our difficulties. The issue is not population versus industrialisation as it is often put by many persons. It is not a question of choice between increase of numbers on the one hand and reorganisation of our economy on the other. On the contrary, we should industrialise our economy even if we decide to control births and we may have to restrict the growth of our population even if we decide to industrialise our economy. We do not want further increase of our number to extend our industrial structure. We can easily accomplish it with our present strength.

We are already greatly handicapped by widespread poverty, illiteracy, high mortality and pervasive ill health. No people have therefore greater reason to be anxious about the quality of its life, than we, and granting that we can enlarge our economic resources we must decide whether we should not use this power to raise our living standard rather than make mere existence possible for increasing numbers. Some of us think that we can in future both multiply unrestrictedly and enjoy an increasing standard of life. All we have to do is to obtain political freedom and direct our energy to the development of our resources. Our new-won political freedom though it will open new opportunities, will not change the objective facts of our material existence. We shall have to solve the problem of maladjustments before numbers and resources. Of course, limitation of numbers alone will not secure the objective of better standard of living, but it is one of the vital facts of Indian economy to-day.

Contents of Fish

Research workers in Bangalore, Bombay, Dacca, Patna &c, have found that all fish including freshwater fish ones provide a rich source of Protein of high Biological value and minerals. Fish and Prawn muscle are both cheap sources of animal protein and essential minerals. Prawns unlike fishmeat have no fat but yet have a high nutritive food value as they store large quantities of animal starch—Glycogen. Crabs & Prawns, especially the freshwater ones, are rich in Calcium. A nursery rhyme current in Coorg recommends the eating of river crabs if one wants to be clever, crabs in paddy fields if one wishes to be brave as a tiger, and crabs in damp ground if he wishes to be really the master of the house ! Prawns figure much in indigenous medical practice. They are recommended as a lactagogue and a regular prawn diet is said to assure the development of the bust. Prawns are also declared to have stimulating and aphrodisiac properties. In the case of Diabetes they are invaluable. They possess Iodine in comparatively greater quantities than mutton or milk. Oysters contain Glycogen, Fats, Vitamins and Iodine and are easily digested.

Fish-Eating

Notwithstanding the prevalence of vegetarianism, large numbers of castes and creeds in India are ascertained to use fish in their daily diet. Those who totally eschew fish as food are the Brahmins except in Bengal, Bihar and even Kashmir, some sections of Caste Hindus such as Vaishnavas, Saivaites, Arya Samajists, etc., Jains and Buddhists. In the United Provinces it is curious that in many parts Hindus and Muslims refuse fish entirely unless they happen to live on the banks of a large fishing river. In Bihar, Bengal and Assam fish is very largely consumed whilst in Orissa, Madras, Mysore, Hyderabad and Bombay a very large proportion of the people would eat fish if they could obtain it. In Baroda where there is a great sentimental objection to fishery activities one point frequently emphasised is the predominantly vegetarian population of the State. Taking the census figures for 1941 and granting that 80% of Hindus and all the Jains are non-fisheaters it is found that 756100 (Hindus, Muslims, Christians, Parsis etc.) out of the total 2855010 i. e 26.5% are fisheaters. In Baroda City however the percentage of fisheaters (Parsis, Muslims, Christians, Bhoyis, Mahrattas, Kshatriya and Konkani, Prabhus, Rajputs, Vaghris, Golas and the depressed classes) is over 50%. Apart from the fact that 26.5 is not a small percentage that their dietetic needs need not be catered for, the Baroda seas famous for their fishing grounds – Kodinar pomfrets all find their way to Bombay markets – can supply fish an important protective food which could be easily exported elsewhere where it is in demand, in these days of transport facilities and food famine.

Fishing Industry

The fisherman's calling is naturally despised–this is noticeable even among Christians inspite of its being the Apostles' own calling–and regarded as the meanest of professions and relegated to the poor. The neglect of the industry is due to this attitude and the ignorance of the financial world about the scope and potentialities of the fish trade. Sentimental objectors there were even to include fishery planning among the many plans proposed for the country but

they were silenced by Mahatma Gandhi's recognition of 'dry fish' as 'forming part of the normal diet of a great number of people who are very poor'. Dr. Rajendra Prasad, when Food Member of the Government of India, declared in 1947, that though he was a vegetarian he realised the need for the Government's providing more fish for those who ate it.

Importance of Fisheries

At the Indian Science Congress session in 1946 the President, Prof. Afzel Hussain, while dealing with foods of animal origin summed up the position as regards fisheries as follows :– "The most important of the food resources of this category are fish. The extensive waters around the coast of India, vast estuarine areas, numerous rivers and canals, lakes and tanks provide almost unlimited possibilities for the production of fish. Fish may be described as the food ready-made for man to collect. The neglect to develop, nay even to control the fisheries in India has been colossal. It is only under the stress of wartime food-scarcity that the necessity of developing this valuable source of food has been recognised. It is encouraging to find that several Provinces and States as well as the Central Government have taken steps to develop the fishery resources of the country. Programmes of development include all aspects of the fishery industry and teaching and research. We can look forward with confidence to the full development of this source of food. An abundant and cheap supply of fish will solve the problem of a balanced diet for the enormous rice-eating population. No effort should be spared to develop fisheries." In September 1948 a conference of Fisheries Officers and others was convened by the Ministry of Agriculture in New Delhi and the Conference adopted over 2 dozen resolutions recommending to all the Governments, Provincial and States, many useful measures which would soon speed up the production of fish in India and so increase the food resources of the nation.

Baroda Schemes

The activities of the Baroda Fisheries department come under the following heads—Research, Biological and technological, Pisciculture and Socio-economic uplift of the fisherfolk. The last is mainly infusion of 'Cooperation' among the fishermen and supplying their requirements and attending to their grievances. One of the Cooperative Societies in Navsari, an important fishing centre, planned to use a boat with an engine for quicker transport and Government have advanced the society the cost of the engine required. The boat is being built at Wadia's dockyard in Billimora and the engine supplied by Greaves Cotton and Co., will soon be installed. To step up production of fish Government have sanctioned the floatation of the Western India Fisheries Co., Ltd., with a capital of 5 lakhs of which 20% would be the contribution of the Government. Large scale fishery operations will be undertaken by the Company under departmental guidance, installing coldstorage stations, cannery, smokehouses, manure and meal factories, putting up huts for fishermen, supplying their vocational requirements, boats, nets and tackle including modern equipment down to power vessels for quick transport and deep sea fishing. Government have also sanctioned the running of 2 departmental fishing units—1 at Okha and the other at Kodinar. Each fishing unit will consist of a power vessel with fishing tackle and fitted with insulated holds and have an insulated lorry for road transport.



QUESTION : I hear so much about Tractor farming these days. Because of the shortage of labour and draught animals, I would like to go in for a Tractor. But I am afraid of the cost !

ANSWER : A small tractor can be bought for today's price of two pairs of good bullocks. But it is not the initial cost of a tractor that counts so much as the service it gives you. With a tractor you can farm more land at less cost and you can do it faster and better. Your profits per acre will be higher. These extra profits will be ample to pay for a tractor and other machines in a short time.

Q : But the tractor will be idle for many months every year.

A: Your tractor engine is a source of power on your farm for every type of work. You can use it for haulage on your farm or to bring your produce to the railway station. Your tractor engine can also drive pumps, threshers or mills and make profit all the year round. And if it should be idle it costs nothing to feed as would animals.

Q : What type of tractor should I buy?

A : That depends on the size of your fields, your soil and the kind of crops you are growing. International Tractors are made in many sizes from 15 to 70 H. P. to suit any farm or any operation. They run on yellow kerosene or Diesel oil.

Q : How can I learn more about farming with tractors ?

A : Write to Volkart Brothers or call on them. They have over 25 years' experience of tractor farming in India. They supply the famous International Harvester Tractors & McCormick-Deering farm machinery. They will be glad to give you advice.

ADVICE : SALES : SERVICE

VOLKART



ASK US ALSO ABOUT DIESEL ENGINES, MOTORS, PUMPS, CREAM SEPARATORS, ETC.

VOLKART BROTHERS, BOMBAY 1.
P. O BOX 199

AMERICAN-HINDU FARMERS COULD FEED INDIA

By : **Ram Nath Puri,** *California (U. S. A.)*

INDIA is importing grains from foreign countries worth about one billion dollars each year, which she could produce herself with the American "Know-How". That one billion dollars, which goes out of India can remain and be used to industrialize the country in manufacturing shovels, hoes, rakes and other farming implements, if Indians would produce the food they eat. They can do it.

Not more than forty years ago, India was one of the wheat exporting countries of the world. To-day she is an importing country. Something should be done before it is too late.

A party of 27 American farmers and a farm journalist, recently returned from Europe, have reported that the Europeans are hungry for information on new crops, and new ways of farming. "Please ship us your farm knowledge", they told them. "That is our biggest need".

When I visited India in 1947, I saw wealthy people, instead of manufacturing garden tools and tractors, were producing moving pictures and publishers publishing novels. There was only one farm magazine in Bombay. The Indian press seemed entirely indifferent to giving farming information to the people. Well, India is different from the rest of the world and will remain so for another thousand years.

About Germany, all the American tourists decided, that what it needs to-day, is an Agricultural Extension Service like America has. India needs the same and I pointed it out in my book, "Produce or Perish."

America is spending about 900 million dollars a year to feed Germany, that is nearly 2½ millions a day. The Germans, they were told, were willing to cut a few days' food shipments in order to pay for new farm information.

Europeans are consolidating their farms. In Switzerland a farmer has 68 acres in scattered little farms. Now he has 65 acres made up of land that used to be held by 54 owners. He lost three acres in this deal; but he is satisfied. Now, tractors and other heavy machinery can easily be used to produce more food. Same thing can be done in India.

Another thing ! The Americans are becoming frightened at the drain of their top soil. They cannot afford to fling away their top soil chemicals indefinitely in exported grain to Europe and Asia. Now they are sending seeds to Europeans, so they can grow their vegetables and fodder themselves on their own soil. Some Germans are coming to study the workings of the Agricultural Extension Service, which is the largest single movement in adult education in America. India must become self-sufficient regarding her food or suffer terribly.

The farm journalist, Ray Anderson, commented, that one hundred American County agents could feed Germany. How about India ? I believe 300 really missionary minded Hindu-American farmers of California could feed India, within a year or two. They are practical farmers with an experience of about forty years in growing rice, wheat, and vegetables and fruits. If the American machinery and land is given to them by the Indian Government for establishing their colonies in each province, they will show how America produces food. Give them land, American machinery and a printing press and see what they can do.

Say, it would cost the Government five or six million dollars a year to keep 300 Hindu-American farmers in India and supply what they would need. What a bargain if they can teach One Million Future Farmers of India what the American Agricultural Extension Service is doing to the American boys and girls.

The Hindu farmers have made good in America. They own and rent large tracts of land and work on them. They will have plenty to do in India. *They will do more good to India than all the Indian Ambassadors, Consulate Generals and Trade Commissioners in foreign countries put together.*

BIGGER & BETTER POTATOES & MORE YIELD PER ACRE

Your yearly yield of potatoes may be good, but are you satisfied that it represents maximum output? Successive cultivation of a root crop like potatoes saps the earth of its fertility, particularly of its mineral contents.

D.C.M. Superphosphate restores this deficiency, stimulates better root formation and promotes vigorous growth.

Charged with D.C.M. Superphosphate, your soil will grow bigger and more nutritious potatoes with a larger yield per acre.

D. C. M. Superphosphate is particularly recommended for soils growing cereals, rice, tea, coffee, tobacco, rubber, cane, fruit, vegetables, fodder crops and root crops.

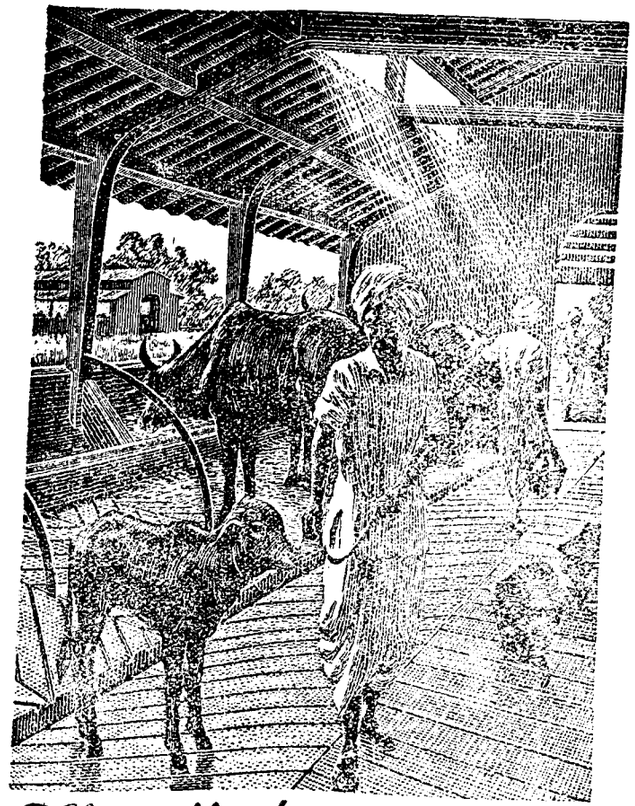
RESTORE & ENRICH YOUR SOIL WITH

DCM

SUPER-PHOSPHATES



For detailed information concerning the uses of Super-phosphates and prices write to: D. C. M CHEMICAL WORKS, POST BOX NO. 211, DELHI. DCM. 60



The Modern Dairy

Pure, fresh milk is of vital importance in maintaining the nation's health. Dairy buildings must therefore be clean, dry, HYGIENIC. And what material is easier to keep free of dirt and wet than CEMENT CONCRETE? Concrete presents a smooth surface—there are no crevices to harbour vermin, and it does not become foul by absorption of liquids. Its first cost is low, and yet concrete dairy buildings are permanent and present an appearance of solid worth. And remember: a healthy and comfortable farm will pay for itself by the increased yield of first-grade milk.

THE ASSOCIATED CEMENT COS. LTD. A.C.C. CEMENT FREE C.A.I. SERVICE

For further particulars, write to the Concrete Association of India, 1, Queen's Road, Bombay.

THE CEMENT MARKETING CO. OF INDIA, LTD.
SALES MANAGERS OF THE A.C.C. LTD.

BUY

COTTAGE INDUSTRY GOODS

Produced by Producers' Cooperative Societies

ARE

MODERATELY PRICED, STRONGER AND LAST LONGER

Send Enquiries for Cap linings, Chappals, Leathers, Hand and Powerloom Cloth, Arts & Crafts Products etc. to:-

THE PROVINCIAL INDUSTRIAL COOPERATIVE ASSOCIATION LIMITED,

9, BAKE HOUSE LANE, FORT,
BOMBAY.

Grams: "SAHYOG" Phone: 34519

Our Publications on Industrial Cooperatives are:—

*Organisation of Industrial Cooperatives by J. B. Tayler	Price Rs. 1/8/-
*Industrial Cooperation by J. B. Tayler	Price Re. 1/-
*Cooperative Management by Rewi Alley	Price Rs. 2/-
*Industrial Co-operatives and Village Industries in Bombay Province by L. N. Renu	Price Rs. 1/4/-

GROW MORE FOOD

WITH

P.M.W.'S POTASH & CHEMICAL FERTILISERS

For use with all Crops, particularly with Sugar-Cane, Tobacco, Paddy, Cocoanuts, Wheat, Potatoes & other Root Crops.

THE PIONEER MAGNESIA WORKS, LTD.

'Phone: 22843 (*Established 1915*) Telegram: "MAGNESIA"

Regd. Head Office:—Chartered Bank Bldgs., 3rd Floor, Fort, BOMBAY, 1.

Special Food Production Number

OF

RURAL INDIA

(MAY-JUNE, 1949)

Limited Number of Copies Available

An Authentic Guide-Book

to all those interested in and working for the solution of Food Problem.

Write to:

THE MANAGER,
RURAL INDIA,
Ishwardas Mansions, Nanachowk, BOMBAY, 7.

Price Rs. **2-8-0**

RURAL INDIA

Vol. XII, No. 6] JULY, 1949 [Whole No. 124

"Salvation of India lies in Cottages."
—*Mahatma Gandhi*

FOOD SELF-SUFFICIENCY BY 1951

IT needs to be reiterated as often as possible that the Government of India has taken a decision to make India self-sufficient in food by the end of the year 1951. It is a bold decision worthy of the best efforts of the nation. Every Indian citizen irrespective of party or political affiliations should feel honour bound to see that the decision is implemented within prescribed limits of the time.

In its practical aspect the decision aims at increasing five million tons of additional food grains to make up the shortage of food in the country. It is estimated, India minus Pakistan area already grows forty-five million tons of food. The deficit is hardly 1/10 of what is already grown in the country and this has to be made up in the course of the next two years. The task, of course, is not at all impossible if the Nation has the 'Will' to do it.

All that is needed is that the national energy should be harnessed to the full. There should be proper atmosphere and helpful conditions created within the country for a successful 'Food Drive'. The programme should be taken up on the basis of war emergency and all that it implies. And, the Government should take all possible precautions to make the 'New Food Campaign' free from all those defects and drawbacks, which in the past were responsible for its failure. They were (1) Absence of Will and Drive at the highest level (2) Lack of integrated planning and direction from the centre (3) Defective approach and (4) Inadequate effort.

It is yet to be seen if the 'New Food Campaign' is free from the mistakes of the past. Public need be enlightened as to how and in what ways the new approach is different from what had already been tried. In order to induce public cooperation to the fullest extent, the Campaign should have elements which must inspire confidence among the intellectual classes and provide necessary incentive and enthusiasm to the producing masses. A creative and constructive campaign of the nature of 'Food Drive' should, of necessity, work up public enthusiasm to the highest pitch to be able to enlist large-scale public effort. Maximum public education and cooperation should therefore be the *sine qua non* of the new Campaign. It should under no circumstance be the close preserve and monopoly of the official hierarchy as has been the case hitherto. Bureaucratic monopolisation of plans of public utility is wholly unsuited to the needs of the democratic age.

The volume of expert opinion on the subject of food production published by

us in the last 'Food Production' number of this journal is definite in holding the view that given right approach and strong drive from the Centre, food shortage can be made up in the course of the next two years. What it is not satisfied with is that the method of approach adopted by the Government is not very much dissimilar to what has already been attempted in the past with discouraging results. That is something which does not inspire public confidence and therefore invite public cooperation so vital to the success of the campaign.

However, it is encouraging to see that the Government is slowly awakening to the necessity of giving priority consideration to the short-term measures of food production as against long-term ones which will take long years to be completed. Large scale irrigational works, electric installations, bringing large uncultivated areas under cultivation with the help of tractor ploughing, cooperative and collective farming, introduction of improved and scientific methods of agriculture etc. are all very good measures from the point of view of long term agricultural development. But from the point of view of meeting the immediate and urgent food requirements of the country their utility is open to serious doubt.

The immediate need can best be met by launching country-wide campaign for large scale manurial production from all available sources and providing facilities for easy distribution where they are lacking. Digging and repairing of wells and small tanks and bunding small rivers and brooks with Government finance and local cooperative effort of the people hold far better prospects of early irrigational facilities to the agriculturists with immediate effect of increased production from the lands already under cultivation. A net-work of organisation of cooperative societies to provide easy finance, arrangement for the distribution of better seeds and facilities for marketing of agricultural produce will enormously add to the happy results of the Campaign. India, being a land of small and scattered villages with no prospects of revolutionary changes in the agricultural economy and structure of holdings in the near future, short term measures alone are best suited to meet the present needs of the community and to solve the problem of food-deficit the country is faced with.

Of course, this postulates huge country-wide organisation. A strong food production organisation should embrace every Province, Union, District, Taluka, village or a unit of villages including every cultivated piece of land in the country. All nation-building departments including food production have been very weak at village end in the past. This organisational weakness has been mainly responsible for failure in the sphere of national reconstruction as also in food production. It should necessarily be made strong at village end. Every village Panchayat or village cooperative society should be made responsible to produce a fixed quota of food within its area of jurisdiction. At every stage, food organisation should have an exceptionally capable and experienced head who should be made responsible to fulfil the food target fixed for the area. Failure to do that should be punishable by dismissal or reduction in the rank with immediate effect. Not till the administration of food production is made so strict and rigid will the desired result be obtained.

Wars can never be fought to victory if the combatants are not dead in earnest about their jobs and if they do not know the price they will have to pay for the dereliction of their duty. If food production should be taken on the basis of war emergency a rigid war-like discipline should be enforced throughout the organisation. That alone would produce results expected within a given period.

Our long personal contact with the life and conditions of the villages have convinced us that a food-self-sufficient village is an exception rather than a rule. Almost every village and for the matter of that a very vast majority of agriculturist families living in a village are normally short of their annual quota of food-supply. It is self-evident that they lack purchasing power as well. That being so, national interest demands that our 'Food Production Policy' should give priority consideration to increase the productivity of the lands already under cultivation and thereby improve the economic efficiency of our vast agricultural population. Scattered efforts at bringing large and uncultivated areas in certain tracts under cultivation or creation of irrigational facilities in certain dry tracts may be good adjuncts to food policy. But these are not sound propositions either from the point of view of increasing general agricultural efficiency or meeting the food shortage of the country.

Then, the production of 10% additional food is not at all a satisfactory solution of the food problem we are faced with. With the best will in the world, it is not possible to bring about just and equitable distribution of food in all parts of the country if we grow just enough to meet the bare needs of consumption of our population. It is difficult to induce agriculturist population to keep just enough for their consumption and to spare the extra stock for circulation and distribution. With the best procurement machinery, Government would find it difficult to make the producing masses agreeable to the quota they would allot for the peasants' family consumption. That would often lead to unwillingness, official coersion and ultimate clashes between the agriculturists and the Government. The present condition of food shortage which has led to unwanted controls, black-marketing and mal-distribution would only disappear when we grow 100% surplus food stock over and above our needs of consumption. Government Food Policy should, therefore, aim at increasing 100% surplus food within the country as part of its long-term programme.

Successful working of a 'Food Production Plan' more than anything else depends on all-round efficiency of administration and willing cooperation of the people. Uncertain and depressing atmosphere in the country and slackening of administrative machinery make the working of the plan doubly difficult. Narrow outlook and party considerations have made the task of the Government extremely difficult in finding just the right man for the right job. The vicious circle so formed impedes the working of any plan of public utility. And the situation in the country continues to deteriorate paving the way for the growth of communism of which Bengal and Andhra have already become nerve centres.

The Government would be well advised to create proper atmosphere for successful working of constructive undertakings. Building a strong and powerful Food Organisation is the only way to check the rising tide of communism and violence in the country. Will the Government wake up in time and realise the necessity of giving top priority to the programme of 'Food Production' before it is too late?

NOTES

PANDIT NEHRU'S CALL TO THE NATION FOR AN ALL-OUT EFFORT AT FOOD PRODUCTION

BROADCASTING from All-India Radio, Pandit Nehru appealed to the nation to realise the gravity of the food situation and to make an all-out effort at production. He mainly spoke on the food problem and said:-

"I want to speak to you about one particular subject, that of food, the primary necessity of mankind and the basic problem for us today.

"We may do without luxuries and even without many necessities, but we cannot do without food. If we do not produce enough food in our country, we become dependent upon other countries and in a matter like food, we cannot afford to be so dependent. Therefore, we have to tackle this problem of food production first of all and put an end to the deficit that has compelled us to pour our money into buying food from abroad. Because of this, the Government have laid down a programme which states that we must have enough food produced in the country for all our people by 1951 and that after that date we do not intend to import food.

"I am convinced that we can do it and that we will do it. But we shall do it only with a great effort in which vast numbers of our people join and co-operate and so I appeal to you for this co-operation in a mighty drive for food production, which is ultimately a war against poverty and ignorance, against malnutrition and high prices.

"Owing to various causes, which I need not go into now, we have a food deficit this year of about 10 percent. A part of that 10 percent has been caused by very special misfortunes that befell us this year, drought in some places, floods in other places and a serious famine in Gujerat and Kathiawar. It is well to remember that in spite of this famine which afflicted Gujerat not a single person, to my knowledge, died of lack of food there.

"So even this 10 percent may be rather an outside figure for our food deficit. Let us however, put the additional figure that we have to reach by 1951 at 15 per cent of our present food production. Is that a very high traget to aim at? I do not think so.

"We are thinking at present of the next two and a half years. Some years after that, our great river valley and other major schemes will begin to produce results and then production will go up by leaps and bounds. I am not worried at all about that period. It is the next two years that count and are vital and which will govern our future.

"Let us remember also that every improvement in production, industrial or agricultural, as well as every increase in the speed of transport helps to solve the problem. If the railways could carry 10 per cent more than they do today, that would result in a quicker and easier movement of goods and would help in lowering prices. If the dock workers could load and unload a little more speedily, shipping charges would go down.

"There need be no fear of unemployment, because when production goes ahead, there is more work and more employment. The farmer need not be afraid that he is ever going back to the pre-war situation. That could never happen. So my appeal is to all classes of workers to join in this great drive for more production all round and, more especially, on the food front. The farmer comes first of course, but all others have also a responsibility and a duty.

Procurement Drive

"May I add that procurement of food grains within India is an essential part of this programme, because the more we procure, the more we lessen the deficit that has to be made good by imports. Some people have unwittingly come in the way of procurement. That is a very unwise policy which does harm to the nation. It does not do good to the farmer even although some may imagine so, for the farmer's good is bound up with the national good today even more than at other times.

"There is another thing of great importance, both practical and psychological. There must be no waste and there must be no feasting while we fight for every ounce of food. Public opinion must condemn this so that any person who indulges in this waste is looked upon as doing something that is indecent and antisocial.

"About two months ago, I invited Lord Boyd-Orr, one of the greatest authorities on food, to come here and advise us. He was good enough to come and to study our problem. He approved generally of the policy and programme that we were following. But he made it clear that, in his opinion, the present situation was a serious one and that any policy would be of little avail unless we did three things.

"First, that we must treat this as if it was a national war emergency and have machinery which can function swiftly and efficiently without the normal delays of the Governmental apparatus. Therefore, he suggested that there should be a Food Controller, or a Director of Food Production, at the Centre with large powers, and similar controllers of food production in each Province and State.

"Second, that there must be perfect co-ordination and co-operation between the Centre and Provinces and States.

"Third, that we must reach down to the farmer in the field. That is, there must be links from the top policy-making place to the farmers who have ultimately to carry out that policy. The farmer must understand and must willingly co-operate. The understanding and co-operation of the farmers was most important.

Centre's Plan

"The Government of India have accepted the recommendations of Lord Boyd-Orr and will endeavour to give effect to them to the best of their ability. But that acceptance itself involves the full co-operation of the Provinces and States with the Centre as well as the enthusiasm of the farmer in this great task. We shall soon appoint a Food Controller or Commissioner at the Centre with considerable powers to act speedily and effectively. We want each Province and State to do likewise.

"I want to tell you from time to time what progress we make in this fight for food. The monsoon will soon be upon us and our reclamation work will have to be suspended. The cultivators will be busy tending and protecting their crops and it will be difficult to estimate their work in figures. Nevertheless, I hope to address you at least once a month and tell you of the progress we are making."

day personal contact, reading papers and periodicals, holding discourses and creating consciousness for improvement. Targets of progress in various directions were fixed on the basis of the records maintained at the Centre, in the beginning of the year, and efforts were made to attain them with the help of the Gram Panchayat. The villager is inspired to take a lively interest in the various operations of farming which he is required to perform as efficiently as possible to obtain desired results. To ensure the availability of good seed even to the poorest cultivator in the village, a cooperative Seed Store has been organised, and the quality of the seed is examined before sowing. Better ploughing and adequate use of manure is emphasised. Means of irrigation are improved by individual as well as cooperative effort with the aid of the Government, and credit facilities are provided by Cooperative Bank and well-to-do members of the Gram Panchayat. Although the method of cultivation is just the same as in ages gone-by, it is being given the attention it requires with the result that the production is increasing.

Lessons of Achievement

It is very significant that while food position in the country has so much deteriorated that it is causing headache to our administrations, Central and Provincial, Deori Centre has achieved magnificent results. It has demonstrated beyond doubt that with proper organisation of the means and resources available in the countryside and active and energetic agency to educate the villager, there are immense possibilities of increasing food production in the country to make it self-supporting. India is short of her food supply only to the extent of 10% of her production. It is no insuperable task to make up this deficit. What is wanted is will, drive and efficient organisation.

Although when compared with the vastness of the country the experiment of Deori Centre stands only on a laboratory scale, yet, if Deori could turn its deficit of 32% into surplus by 48%, and increase its total food production by 182% and per acre production by 100%, there is no reason why results of similar nature in more or less degree cannot be obtained at other places in the country if they have not already attained saturation point in their production. But saturation point apart, it is no secret, that India stands last in the list of countries in respect of production per acre.

Inspite of 100% increase in production per acre at Deori Centre, there is still much to be done to attain standard production. Most of the land under cultivation is dry and the means of irrigation are badly wanting. Apart from natural drawbacks of poor quality of soil and scanty rainfall of 34", many facilities which an administration can provide are lacking. And, what is true in case of Deori, may be true in case of thousands of other places. If they can be developed like Deori, our country would be abounding in food supply, and there would be no cause for us to go abegging for food from foreign countries.

Adarsh Seva Sangha, with its limited resources, has extended the experiment of Deori to a wider area of 220 villages of Pohri Tehsil in Madhya Bharat. It was to demonstrate the working of this experiment in this area that Pohri was selected for the venue of holding the All-India Food Production Conference invited by the Sangha in April last. It is unfortunate that the plans were frustrated by party politics of Madhya Bharat. May we hope that the dark clouds of distrust, personal jealousies and petty selfishness which have characterised the politics of Madhya Bharat so far will clear out in no distant future and the much desired project of the All-India Food Production Conference will receive the cooperation and support of all concerned?

Comparative Agricultural Production Chart for the years 1938-39 and 1948-49

Rural Reconstruction Centre Deori,

ADARSH SEVA SANGHA, POHRI, MADHYA BHARAT.

Population— 1117 in 1938-39 and 1228 in 1948-49.

S. No.	Item.	Area under cultivation in bighas.		Increment in 1948-49 over 1938-39.		Production in maunds.		Increement in 1948-49 over 1938-39.		Production per bigha		Increement in 1948-49	Remarks.
		1938-39 Samvat 1995	1948-49 Samvat 2005	Area in bighas.	Percentage	1938-39 Samvat 1995	1948-49 Samvat 2005	Maunds	Percentage	1938-39 Samvat 1995	1948-49 Samvat 2005	Percentage	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	CEREALS									md. sr. chh.	md. sr. chh.		
1	Wheat	1083	1783	700	65%	1696	7034	5338	314%	1-22-10	3-37-13	152%	
2	Jwar	1197	1230	33	3%	1265	2173	908	71%	1- 2- 4	1-30-11	67%	
3	Paddy	4	273	269	6725%	36	216	180	514%	9- 0- 0	0-30- 7	—91%	
4	Barley	28	59	31	110%	78	223	145	188%	2-31- 7	3-31- 3	36%	
5	Bajra	4	10	6	150%	5	3	—2	—40%	1-10- 0	0-30- 0	—40%	
6	Rala, Rali, Kutki, Kodo.	60	67	7	11%	280	227	—53	—19%	4-26-10	3-15- 8	—28%	
7	Maize	127	123	—4	—3%	194	148	—46	—23%	1-21- 1	1- 8- 2	—21%	
	Total...	2503	3545	1042	41%	3554	10024	6470	182%	1-16-12	2-33- 1	100%	
	PULSES												
8	Mung	117	208	91	77%	21	294	273	1365%	0- 7- 3	1-16- 8	986%	
9	Urad	149	131	—18	—12%	32	50	18	58%	0- 8- 9	0-15- 4	78%	
10	Arhar	109	114	5	4%	94	93	—1	—1%	0-34- 8	0-32- 0	—7%	
11	Masoor, Batra, Matar	24	28	4	16%	18	54	36	5%	0-30- 0	1-37- 2	160%	
12	Gram	468	104	—364	—77%	303	108	—195	—64%	0-25-14	1- 1- 8	60%	
	Total...	867	585	—282	—32%	468	599	131	28%	0-21- 9	1- 1- 0	90%	
	OTHER CROPS												
13	Ground nuts	158	174	16	1%	775	794	19	2%	4-36- 3	4-22- 8		
14	Gur	10	51	41	407%	38	426	388	1020%	3-32- 0	8-14- 2	[illegible]	
15	Tilee	268	123	—145	—54%	242	33	—209	—86%	0-36- 2	0-10-11	—70%	
16	Alsi	139	298	159	114%	110	595	485	440%	0-31-10	2- 0- 0	153%	
17	Ajwayan	8	23	15	187%	11	6	—5	—45%	1-15- 0	0-10- 7	—81%	
18	Red pepper	20	8	—12	—60%	22	9	—13	—59%	1- 4- 0	1- 5- 0	2%	
19	Jira	35	2	—33	—94%	1	3	2	200%	0- 1- 2	1-20- 0	422%	
20	Cotton	10	6	—4	—40%	9	5	—4	— 44%	0-36- 0	0-33- 8	—7%	
21	Dhania	11	15	4	36%	23	60	37	161%	2- 3-10	4- 0- 0	91%	
22	Sun, hemp	63	88	25	39%	59	115	56	94%	0-37- 7	1-12- 4	39%	
23	Tobacco	17	3	—14	—82%	45	47	2	5%	2-25-14	15-26-10	492%	
	Total...	739	791	52	7%	1335	2093	758	57%	1-32- 4	2-25-13	46%	
	Grand Total...	4109	4921	812	20%	5357	12716	7359	137%	1-12- 2	2-28- 6	100%	

NOTE :—

(1) The area under cultivation at the Centre has increased from 4109 bighas in 1938-39 to 4921 bighas in 1948-49 showing an increase of 20%; while the agricultural production during the same period has increased from 5357 mds. to 12716 mds. registering an increase of 137%.

(2) In 1938-39, it was a deficit area to the extent of 32% in its food requirements. In 1948-49, it is a surplus area to the tune of 48% after making full provision for food and seed requirements of the population.

(3) The average production per bigha for all crops in 1938-39 was 1md. 12srs. 2 chh. It has now increased to 2 mds. 23 srs. 6 chh. in 1948-49 effecting 100% increase in the productivity of the land.

ORGANISATION OF THE COUNTY AGRICULTURAL EXECUTIVE COMMITTEES IN U. K.

Food scarcity is a world problem. During war as also in the post-war period shortage of food supply brought home to many people the world over the necessity of increasing food production and making themselves self-sufficient in food requirements. The United Kingdom has set up an efficient organisation known as the County Agricultural Executive Committee to look after agricultural reconstruction and food production in that country. British Information office in India has supplied us a Scheleton of this organisation, which may be of particular interest to us when we are planning to set up a similar organisation in our own country.

Unlike our own country where there are no standard Government rules or regulations for good estate management or husbandry, one of the important functions of this County Agricultural Committee is to enforce these rules on the estates and farms within its jurisdiction in the U. K. and to take under its own management and supervision such farms and lands as are not being properly managed by their owners in accordance with the rules of good husbandry. This laying down of standard rules for good farm management and creating an efficient machinery to enforce them in every unit of a farm is of particular interest to us in India when we are out to wipe off food shortage in the course of the next two years. The functions of the County Agricultural Executive Committees are as follows:—

The Functions

The more important functions of the combined county organisation, exercised under general instructions issued by the Ministry, are:-

(a) The provision of technical advice to owners and occupiers of agricultural land on matters of estate management and husbandry.

(b) The making of orders placing owners or occupiers of agricultural land under supervision, where there has been failure either to manage the land in accordance with the rules of good estate management or to farm the unit in accordance with the rules of good husbandry.

(c) Where supervision orders as above are in force, the issue of specific directions on matters of estate management or husbandry as the case may be.

(d) Restrictions on (i) the termination by notice of agricultural holdings and (ii) letting agricultural land for less than from year to year and determinations on other issues as between landlord and tenant arising under Part III of the Agricultural Act 1947.

(e) Administration of regulations under the Food and Drugs (Milk and Dairies Act, 1944, relating to the hygienic quality of milk at the point of production.

(f) Management and farming of land requisitioned by the Minister for agricultural purposes under Defence Regulations 51.

(g) The supply, on payment, of goods and services to owners and occupiers of land, including the hire of agricultural machinery and labour and the execution of cultivation, land drainage, pest destruction and other work.

(h) The custody, maintenance and operation of vehicles, agricultural, drainage and other machines and implements, and the employment and housing of agricultural, industrial and voluntary workers for the above-mentioned purposes.

(i) The issue of coupons to farmers under the animal feedingstuffs rationing scheme. The issue of permits for the purchase of certain controlled articles and materials.

(j) Advice to the Ministry (as agent of the Ministry of Labour and National Service) on the deferment of release of farmers and agricultural workers from military service.

(k) Local administration of schemes for the payment of subsidies and grants for farmers, including the certification of applications for subsidies and grants payable by the Ministry.

(l) Furnishing advice and information to the Minister on local agricultural conditions.

(m) Administration of training of ex-servicemen under the Vocational Training Scheme.

DEORI VILLAGE CENTRE TREBLES ITS FOOD PRODUCTION IN TEN YEARS

By : R. G. Gupta

IT may be of interest to know that Deori Village Centre conducted by Adarsh Seva Sangha, Pohri, Madhya Bharat, has trebled its food production in the course of the last ten years. In 1938-39, when this Centre comprising of 7 villages with a population of 1117 was undertaken by the Sangha for all-sided development, the production of food grains—wheat, jwar, barley etc. which consititute the staple food of the people in this area—was 3553 maunds as recorded by the village workers from each family in the Centre. In 1948-49, the same has increased to 10024 mds. which is practically three times that of 1938-39.

The area under cultivation of food crops in 1938-39 was 2503 bighas which has increased to 3545 bighas in 1948-49 registering an increase of 41%. While food production during the same period has increased by 182%. The production per bigha which was 1 md. 16 sr. 12 chh. in 1938-39 has gone up to 2 mds. 33 sr. 1 chh. effecting 100 per cent increase in the productivity of the land (detailed chart for area and production is appended herewith).

From self-sufficiency point of view the area was deficit in food requirements of the population to the extent of 32% in 1938-39. It is a surplus area to the tune of 48% in 1948-49 and can afford to spare 3245 mds. of food grains to others after meeting its own demands of 5526 mds. for the consumption of 1228 population in the year at the rate of 1 lb. per head per day and 1253 mds for seed and losses due to wastage etc.

Progress in 1948-49 as Compared With the Preceding Year

As compared with the production of 1947-48, the production of food grains in 1948-49 has increased from 7148 mds. to 10024 mds. registering an increase of 2876 mds. or by 40%; while the area under cultivation has increased from 2695 bighas to 3545 bighas showing an increase of 850 bighas or by 31%. The production per bigha in 1947-48 was 2 mds. 26 sr. 1 chh. which has increased to 2 md. 33 sr. 1 chh. in 1948-49 showing an increase of 7 seers per bigha or 6.6%. In 1947-48, the area was surplus in its food requirements by 20%; now it is surplus by 48%. The detailed comparative figures of the agricultural production for 1947-48 and 1948-49 are given below:—

	Area under cultivation 1947-48	1948-49	Increment in 1948-49 Bighas	Per Centage	Production 1947-48	1948-49	Increment in 1948-49 Mds.	Percent	Production per bigha 1947-48	1948-49	Increment %
Cereals	2695	3545	850	31%	7148	10024	2876	40%	2-26- 1	2-33- 1	6.6%
Pulses	767	585	-182	-24%	991	599	-392	-39%	1-11-11	1- 1- 0	-20%
Other Crops	1386	791	-595	-43%	4004	2093	-1911	-47%	2-35- 9	2-25-13	- 4%
Total	4848	4921	73	1.5%	12143	12716	573	4.7%	2-20- 3	2-23- 6	3.5%

It may be observed from the above figures that out of 2153 bighas of land under non-food crops in 1947-48, 777 bighas of land were transferred to food crops in 1948-49, while 73 bighas were added from the land lying fallow. The total agricultural production has increased from 12143 mds. to 12716 mds. or by 4.7% and the productivity per bigha of land has gone up by 3.5%.

Means Employed

The achievements of Deori Centre in the sphere of food production are a result of the various means employed for the general uplift of the village people by Adarsh Seva Sangha. The greatest contributing factor in these achievements is the psychological metamorphosis the people have undergone by a vigorous drive for mass education through day-to-

RURAL-URBAN RELATIONSHIP

By: Dr. D. S. Chauhan

THERE has been a gradual depletion of wealth, power and culture from our villages. After the disintegration of village communities the social protection afforded by them ceased and likewise their functions in social, economic and political matters. The decline of village handicrafts narrowed down the field of economic activity and led to the increased pressure on agriculture, which under the influence of increasing population was gradually rendered more and more uneconomic. Today villages wear a deserted appearance. Village life is rendered less vivacious and less varied, unwholesome and unhealthy, cramped and circumscribed and narrow and incomplete, in a word not worthful. Cities on the other hand, though an apology for the urban pattern of advanced countries, have been slowly and gradually becoming the nuclei of wealth and power, of art and culture, and of the modern advancement. They have been constantly drawing money, material and intelligence, everything good and superior so to say, from rural areas rendering them more and more impoverished in all respects. The worst feature is that the villages are left where they were centuries back and the gulf between the two is constantly widening. This is a very unhealthy feature and is creating fresh problems both for towns and for villages. It is intended to focus the attention only on the latter aspect.

The problems with which villages are faced as a consequence of it are many. They are drained of wealth and intelligentsia, i. e., the upper strata of society which is quick to adopt the new ways of life and acts as an example for and provides an incentive to others. The upper strata of society moving to urban areas, the chances of occupations being multiplied, of fresh avenues of employment and fresh sources of wealth being created, and of new ways of making a fuller life being adopted, are minimised. Occupations being limited and inefficiency being a general rule, wages, employment and output, and hence the scale of living, are bound to be at a very low level. Workers who move to towns are brought up by villages till they attain the age and capacity of being effective producers. The burden of bringing up when they are young and again when they return as old and feeble falls on villages. Modernism which is nursed and further flourishes in metropolitan milieus can scarcely penetrate the conservatism and ignorance which envelop villages. Village atmosphere acts as a bad conductor to the civilizing currents. There is no material and social environment in which culture can be enriched. The decline of feudal lords who were mostly settled in villages, and the concentration of money lords in cities, are further adding to the difference between the two. For the past few years a sudden agricultural prosperity and a new economic, social and political awakening amongst the masses have often been talked in exalting terms. They are perhaps exaggerations. Really speaking there should be no denying of the fact that masses in villages are living on a sub-human level. It is painful to notice the sense of contempt, scorn and

not a happy course since it involves serious problems of human 'mixing' in towns where strangers come together. Besides the experience of Great Britain and U. S. A. provides further lessons of a similar nature. We cannot afford the luxury of such costly mistakes. On the other hand, in order to maintain the physical standards of race a constant infusion of fresh blood from rural areas is very necessary. It is quite evident that physical standards of the urban population deteriorate and birth rate of the third generation of townsmen decreases noticeably. American tests have further demonstrated that country-born and their children produce more leaders of men than the succeeding generations of townsmen. Hence a constant drift from rural areas has to be permitted. But it can be allowed to a limited extent only. Perhaps a better course is to extend the urban limits and the development of some big villages into towns. We do not very much appreciate the idea of developing Greater Bombay or Greater Delhi or Greater this city or that. A happier choice would be the provision of amenities and the extension of urban utilities to villages.

Amenities, the experience of the world shows, even in towns arrive much after the need, they will very much after the need in villages. An attempt in this direction by local and provincial governments is very necessary. Besides it will involve two important considerations. First, the drift to the towns has to be allowed only to a limited extent. The causes of drift have generally been: high wage attraction, love of excitement and adventure, alleged dullness of the countryside and the increased use of machinery in agriculture. Peculiar factors in India have been the decline of village handicrafts resulting in the lack of avenues of employment for increasing population, and the social conditions of lower castes. The causes of accelerated drift have to be avoided through legislative measures and social reforms. Secondly, the rural environment has to be transformed so as to support and maintain at a reasonable standard a considerable proportion of population. Capacity to hold population depends on the nature of employment being provided and the extent of capitalization. It requires a higher degree of intensification of agriculture, organized rural credit, diversification of employment and industrialization of rural areas. The extent of unemployment likely to be created by mechanization of agriculture, which seems unavoidable, has often been exaggerated. Perhaps the situation of Denmark has not been well appreciated where the extent of mechanization in agriculture is more than that in England and yet there are twice as many cultivators per 1000 acres as in England. Very often doubts have been expressed regarding the capacity of industry to absorb agricultural population. Perhaps the potentialities of rural industrialization on small-scale are not well anticipated and much less the fact that not only does the industrialization process itself absorb a part of agricultural population but it is accompanied by an increase in other major occupational groups except agriculture. The following table is very revealing in this respect.

Percentage Distribution of the Gainfully Occupied Population.

Country.	Yr.	Agr. & Fishing.	Mining.	Manufacturing & Handicrafts.	Com. & Transport.	Administration & Domestic services.
1. Typical Industrial Countries.						
U. K.	1930	7	5	32	23	33
Belgium.	1930	17	6	42	21	14
U. S. A.	1930	22	2	30	27	19
Germany.	1933	29	4	36	19	12
France.	1931	36	2	32	17	13
Italy.	1936	48	1	28	13	10
Japan.	1930	50	1	19	20	10
2. Other Industrial Countries.						
Australia	1933	20	2	30	24	24
New Zealand.	1936	28	-	24	26	22
Argentina.	1930	30	-	...	...	...
Canada.	1931	31	2	25	23	19
Denmark.	1930	36	-	26	18	18
3. Less Industrialised Countries.						
Ireland.	1936	48	-	15	13	24
Palestine.	1931	51	1	15	15	18
Hungary.	1930	54	1	23	10	12
Spain.	1920	56	2	19	8	15
Poland.	1931	65	1	16	8	10
U. S. S. R.	1930	67	...	...	...	...
4. Countries Lagging in Industrial Development.						
Egypt.	1927	67	-	11	12	10
Mexico.	1930	68	1	13	7	11
India.	1931	72	-	11	7	10
China.	1930	70-75	...	...	...	...
Brazil.	1930	75	...	...	...	...
Roumania.	1930	78	-	7	5	10
Turkey.	1935	82	-	8	4	6

(Industrialization and Foreign Trade, League of Nations, 1945).

disgrace with which the words 'dehat' and 'dehati' are used in towns, and likewise the place they are assigned on the scale of social and economic values. It has not been fully appreciated that villages are the bed-rock of our national structure. They are the ultimate source of the diffused rays of life which fall into focus in cities. The signs and the symbols, the designs and the patterns and the systems and the orders of urban life, which are considered to be the durable elements of human heritage are but the 'ethereal-ized' forms of life in the countryside. Thus there is limit to the progress of the former fixed by the nature and character of the latter. And any attempt of progress and planning the reconstruction cannot afford to neglect the countryside. Not only that, the extent to which progress can be made by the country as a whole cannot be far ahead of that of villages.

What is the remedy? How is the growing difference to be minimised? To be simple and short, the remedy lies in providing the necessary incentives and opportunities for progress. But things are not so simple as this simple suggestion makes them. They involve several vital considerations. Some important ones are: distribution of population in urban and rural areas and their mutual relationship, a balanced occupational distribution, security of employment and of output, opportunities for enhanced production, equitable distribution and adequate savings, stimulating an urge for improvement, social engineering, and above all creating an environment for the development of the art of life. Discussion of all these problems needs space which can hardly be afforded by a single article. It is intended to examine here only the first one.

The unbalanced nature of the existing distribution of population between rural and urban is quite evident. It calls for a reduction in the relative percentage of rural population, and a consequent increase in that of urban. But to what extent should this sort of adjustment be suggested and how is it to be accomplished, are important considerations. The old idea of the ideal ratio was that half of the population should live in villages and the other half in towns. But that old order and its institutions, methods and ideals have changed. In Australia rural population is only 30%. Not only does it produce an adequate amount of food for the other 2/3 but an exportable surplus of about £ 125 millions. There the output per head of those engaged in agriculture is very high and the output per acre is very low. It demonstrates that under up-to-date extensive agriculture where the output per worker is very high the ratio of 1:1 is not necessary. In Great Britain the ratio of rural and urban population is 1:5 and in U. S. A. rural population is about 43% of the total. Modern technocracy makes one believe that about 20% of the population can supply the increased demand for agricultural commodities and 35 to 40% the increased demand for all the primary products. This shows that the ratio of 1:1 will not be necessary in future. But if population in Australia increases agriculture will have to be intensified, output per acre will increase and that per man will go down. The present ratio will be unbalanced and a greater percentage of rural population will be necessary. Besides in Great

Britain dangers of the inadequacy of rural population are quite evident, and in U. S. A., with the development of roads and the extension of urban utilities a greater drift from cities to suburbs is very likely. This is indicative of the fact that a very small percentage of rural population is not desirable. Then, are we to strike mid-way between the two extremes: a balanced distribution with a ratio of 1:1 and that of England 1:5. If economic view point—number of persons required to feed the nation and to supply raw materials—could be the only determining factor, probably this method could serve our purpose. There are other important considerations such as social, moral, and the physical standard of the race. The dehumanizing of population has been a conspicuous feature of urbanization under the neotechnic civilization. It is because urbanization has been the result of industrialism which has been too much under the grip of business. The urban centres have been too much preoccupied with business and the fruitful impulses of community have remained suppressed. Thus for moral and social considerations a very large proportion of urban population is likewise not desirable. Are we to aim then at an even distribution like that of Canada and France? Perhaps that too seems inappropriate since it ignores the back-ground of our problems. India has to produce increasing quantity of food and raw materials and other primary products, and secondly the introduction of technocracy to the extent and of the quality which will need only 35 to 40% of population to supply all the primary production will take very long. Taking a long view, moral, social and economic stability of the nation depends on maintaining an adequate proportion of rural population. And taking our conditions in view India will have to maintain a quite considerable—more than half—number of her population in rural areas. But let it not be taken as an argument for justifying the existing distribution. It has to be re-adjusted and the % of rural population has to be decreased. To what extent should it be reduced in the final shape of things, or even at a particular time in future, depends on many considerations. These considerations shall take account of the existing stock of resources and environment, trends of production and population, the level of economic and social development and the ideals and the objectives of planning. They will further include the valuation of such considerations in future. The latter can only vaguely be anticipated at present. However, to be definite 3:2 ratio of rural and urban population, if it can be achieved even by the close of this century, will be very much desirable.

How is this ratio to be accomplished? In almost all countries of the world there is a trend from the countryside towards the towns. Even in those countries where rural population is increasing the rate of increase is greater in the case of urban population. Practically every-where the percentage of rural to the total population is decreasing. But leaving things to their normal course shall take very long to adjust the population in the desired ratio. Again the methods of nature may be harsh. Thus planning, which implies taking the major decisions deliberately, has to be made. It will involve a drift to the towns and an extension of urban limits. The former is

Lastly, the knowledge of organic life demonstrates that there cannot be a compartmentation of population into separate rural and urban zones. The autonomy of organism which is a characteristic feature of its growth does not lead to isolation. Environment is a cooperative factor in the development of organism. It has an important bearing on the development of human society. When machine was considered supreme human ideas and ideals were too much influenced by quantitative measures of power and progress. Now organism being considered uppermost the line of thought has changed to qualitative measures like growth, norm, inter-relationship and association. The aim is not to make man more powerful but to make him capable of developing the attributes of culture. Thus not only are the lost communities to be re-discovered but a constant touch with a larger environment has to be developed. It requires a close and permanent contact between urban and rural areas. This can be achieved by developing the means of communications and transportations, electrifying the rural areas, making the economic, social and political institutions integral parts of the larger institutions, scattering the higher educational institutions in rural surroundings, substituting the present political serfdom of villages by real rural democracy, over-hauling the existing constitutions, powers and functions of local bodies and also redrawing of local boundaries.

AGRARIAN REFORMS IN INDIA

By: Mahesh Chand

ONLY a few days back, with a catch in his voice, Dr. J. C. Kumarappa, the Chairman of the Agrarian Reforms Committee, had disclosed that the conditions of the agricultural workers was worrying him far more than anything else. He had particularly given a graphic description of the agricultural workers in the Madras Presidency. Then he disclosed that the Committee will recommend a land tenure system suitable for introduction in provinces except the U. P. He also revealed the weakness of the witnesses in that most of them did not go deeply into the question of the future set up of our rural economy. On the occasion of the Committee's visit to Allahabad, an attempt is here made to fill the gaps and also examine in brief the implications of Dr. Kumarappa's views.

The Future Set-Up

The view prevalent in the official and the non-official circles seems to favour the introduction of cooperative farming. But what is meant by cooperative farming? A multiplicity of definitions can be found lying in the Memorandum on the Development of Agriculture and Animal Husbandry in India (1944), Captain Mohite's Report on Cooperative Farming in Bombay, Report of the Cooperative Planning Committee, and even in the questionairre issued by the Agrarian Reforms Committee. A cooperative farming society may be anything from one which means joint large-scale cultivation to one which is no better than a multi-purpose cooperative society. They do not realise this. The term "cooperative farming" has been the safety valve to any

deep thinking.

We must give up thinking in terms of cooperative farming and boldly answer the question whether we want individual family cultivation (with or without the ownership of the cultivated land) or not: also whether we want to make use of the cooperative principles in helping these families. Personally I stand for individual family farming with a cooperative society at the back.

As to the ownership rights to be acquired by the State from the intermediaries, these may be transferred to individuals. In other words, the tenancy rights should be hereditary, as well as transferable but through the village community. In U. P. it shall be sufficient to give the tenants transferable rights as well, for they already enjoy hereditary tenancy. All land, which is not cultivated at present and which it is decided to cultivate, should be cleared, opened and made ready for cultivation on Government account. Except for land which may be set aside for demonstration purposes, all such land should be used to settle family units with cooperative societies at the back.

The question remains: how much land should each family cultivate? In other words, should there be a minimum and a maximum limit to the holding of each family? While any limits shall depend on the agricultural facilities available and the technique of cultivation adopted, the minimum limit shall depend also on whether we want the family to adopt agriculture as its only means of livelihood. Personally I feel that we shall have to make provision for various sizes of holdings "for allotments and gardens, and for holdings so small that they can be worked by people who have some other occupation". As to the technique of cultivation, I am not yet convinced of the scope for large scale mechanical farming in India except with regard to certain reclamation schemes, nor of the futility of mixed farming. Therefore, in general it may be said that the land allowed to each family should be what a family of average size can cultivate with a pair of bullocks. From intuition I am now inclined to place the area of such land at ten acres. Other members of a large family should be provided work in non-agricultural fields. Should the number of families fall short, families which have additional members and special aptitude for agriculture should be allowed more land. If a family likes to use tractors and such implements of its own, no objection need be raised: but all workers must come from that same family.

We do not know what is the distribution of the size of the cultivated area (i) by ownership and (ii) by cultivators. So far as U. P. is concerned it can be roughly said that while most of the zamindars share about half of the agricultural land, the other half is shared by a few thousand zamindars. So even if we keep a maximum ownership limit at 30 acres, most of the zamindars are not likely to lose the land under their cultivation. As to the other some thousands of zamindars, the loss would not be great, for hereditary tenancy rights have already accrued to their tenants with regard to a high percentage of their land. So a maximum ownership limit of 30 acres would not mean much. And as the average size of the holding and the average cultivated area per cultivator did not exceed 10 acres (in 1931) except in Bombay and C. P., a maximum limit of 30 acres with regard to the holdings also would not release any appreciable area of land for

redistribution. If we decide to build up the below-the-minimum holdings to the minimum level, practically little land shall be available for distribution to non-cultivators.

Dr. Kumarappa had a catch in his voice while referring to the agricultural (landless?) labourers. The above analysis seems to indicate that if we decide to build up the below-the-minimum holdings the amelioration of the economic condition of the landless labourers lies in diverting them to non-agricultural fields, and this cannot be achieved over-night. The effort to build up the below-the-minimum holdings is very likely to mean a release of landless labourers from agriculture—in other words, an accentuation of the plight of these labourers. If we want to avoid any such accentuation, we must leave the cultivation of holdings up to (say) 30 acres with their present cultivators. Of course, so far as absentee landlords and intermediaries are concerned, all land should be taken away from them and distributed among (say) landless labourers who have the capacity and resources to undertake cultivation. The suggestions made in this paragraph would also be in keeping with the short period requirement that agricultural production must not suffer. But for this short period objective, I should at once advocate the simultaneous compulsory consolidation of holdings. In any case it must be implemented as soon as the situation with regard to agricultural shortage eases.

In any arrangement provision must be made for the movement of people from agriculture to non-agriculture and *vice versa*. If we adopt a system of family farming, assume a time-difference between a withdrawing tenant and an incoming tenant, and want to avoid any redistribution of land each time a family withdraws, then this mobility of people is likely to result in a scatteredness of holdings to a certain extent. This conclusion also follows from the argument that a family whose efficiency in farming is increasing would perhaps be allowed to take up land elsewhere. The necessary readjustments to maintain the compact nature of the holdings shall have to be left to a local body—either the cooperative society or the village panchayat. It shall be easier to make the readjustment if families are allowed to transfer land only to the local body. Sub-letting may, however, be allowed for short periods when due to incapacity, illness etc. a family cannot make use of its land. Every sub-letting should be registered free of cost with the local body which shall have the right to disallow a sub-tenant and substitue another in his place.

Village Panchayats and Cooperatives

Of the two local bodies viz., the Village Panchayat and the Cooperative Society, the former is being created in the provinces compulsorily while the latter is a voluntary organisation to a certain extent. Therefore, so long as the latter does not come to be established, the collection of the village-taxes and government dues may be entrusted to the village panchayats. Later, as the cooperative societies get established, it shall be easier to collect the dues from the members of the society through the society itself. The society should be made responsible for implementing the crop plans compulsorily; for credit and marketing if a majority of the farming families agree; and for the supply of seed, manures, implements and other agricultural and consumption requirements on an optional basis both to members and

non-members. If possible, the same cooperative may be made responsible for the non-agricultural activities also. It should then be easier to provide employment for the unemployed persons living within the area of operation of the society. The area of operation should, as far as possible, be identical with that of the village panchayat.

Joint Cultivation

It is possible that members in a certain area may pool their lands under the cooperative society for joint cultivation. Although I have advocated individual family farming, I would not object to this, provided the holdings of those who pool their lands make a compact block. In this case, a withdrawing member may be given an area equivalent to his originally pooled area provided he would cultivate land individually: otherwise a money compensation should be paid. In case a piece of land has to be allotted to a withdrawing member, it should be such that it does not adversely affect the joint cultivation-plan, and is also convenient to the withdrawing member as far as possible. A member who non-cooperated with regard to the compulsory and obligatory items should be expelled by a decision of the general meeting and left to his own resources to earn a living.

The State

The Government should place at the disposal of each society the services of experts trained in economic planning, cooperation and agriculture. There shoud be state audit. The Development Department, the Cooperative Federations and unions should see to the maintenance of efficiency and democratic management and give due publicity to the progress made.

It should also pass a portion of the compensation to be paid to the intermediaries to the cooperative societies of the respective areas as deposit and guarantee it for principal and interest.

Crop-Planning

Nothing has so far been said about self-sufficiency. Farming need not be planned on the basis of self-sufficiency for each family. We may well plan it to achieve self-sufficiency for the area as far as possible and in any case with regard to food. In order to achieve this self-sufficiency we must hit the cash-crops, beginning with the socially undesirable cash-crops first. Each village may try to raise to the maximum possible extent raw materials for the consumer goods needed by the local people consistent with the extent and quality of village-land. The exports of food and raw materials should be limited to proved surpluses.

Instead of guaranteeing a minimum price for the agricultural produce, efforts should be made to reduce the fluctuations in agricultural prices through cooperative marketing and finance, creation of sufficient storage capacity with the society and the introduction, as far as possible of the collections and payments in kind. It should be completely possible to realise the dues from the cultivators and others in kind. A greater portion of the collection can be left in the village for meeting the expenses of the panchayat and other rural development programmes. Yet I feel that the present system of cash rents be left unchanged for some-time. Also, I would retain the present rates of rents except that they may be reduced on the smaller holdings, say, on the scale recommended by the U. P. Zamindari Abolition Committee. A

commission of ten percent may be allowed for the collection of rent. An agricultural income tax can be levied on the income of those living in the rural areas, but it should lose its importance with the creation of family-farms and abolition of the intermediaries.

Education

The Indian cultivator— better, the Indian villager—is intelligent and hard-working. Unfortunately he has lost his old organisations and systems, and is ignorant of how the world outside his hamlet, village, tehsil and district has progressed. The village panchayats and the cooperative societies shall be his organisations. And if we be sincere about it, it should be possible to raise his educational level sufficiently by organising adult education and agricultural training in about a decade. This is essential particularly with regard to the cooperative principles and village panchayats.

Town and Country

A parity between the prices and the cost of living in rural and urban areas can be attempted. The first step in this direction should be to transfer people from agriculture to non-agriculture, and non-agricultural activities from urban to rural areas.

U. P.—an Exception

Finally and as a digression, U. P. already has a tenancy Act which is a model to others; a Panchayat Raj Act peculiar to itself; and a Zamindari Abolition Report which is based on a very realistic view of the situation. No wonder then if Dr. Kumarappa's Committee has decided. to recommend a land tenure system suitable for introduction in provinces except U. P.

COMPOST PRODUCTION AND THE GROW MORE FOOD CAMPAIGN

By: Dr. C. N. Acharya

NEXT to land and water, manure is the most important single factor that can increase our agricultural production. In the case of poor soils, the effect of manure can be much greater than the difference between the yields of irrigated and rainfed areas. Considering the fact that the reclamation of new land as well as the execution of irrigation projects require heavy machinery and capital equipment and take several years to be completed, the supply of greater manure appears to be a cheap and ready method of increasing production, in which results could be obtained within a short time.

Village Manure

The most important manure now in use in the country is village manure (commonly known as cattleshed or farmyard manure). It is estimated that about 200 million tons of this manure are at present being applied to about 200 million acres of land under cultivation in this country. The relative importance of cattleshed manure as against other forms of organic and inorganic manures like oil cakes, ammonium sulphate, superphosphate etc. in the quantities at present in use in this country, is shown in Table 1.

Table 1.

Type of manure.	Estimated quantity now used in the country. Tons.	Total content of Nitrogen. Tons.	Phosphoric acid. Tons.	Estimated increased food production. Million tons.
1. Cattleshed manure.	200 millions.	10 Lakhs.	3 Lakhs	10.0
2. Oil cake.	1.5 ,,	0.75 ,,	0.3 ,,	0.75
3. Ammonium sulphate.	250,000 Tons.	0.50 ,,	nil	0.5
4. Phosphatic fertilizers (including bones.)	100,000 ,,	.....	0.2 Lakhs	0.2

As regards oil-cakes, it may be noted that there is considerable demand for their use as concentrates for milch cattle in the country and if edible cakes are omitted, the quantity of inedible cakes like castor, neam, hongay etc., available for use as manure would amount to less than 0.5 million tons per year.

It would be seen from the data given in Table I that under the existing conditions in India, Cattleshed manure supplies nearly ten times as much nitrogen and phosphoric acid to the soil as the other manures and fertilizers put together; and this inspite of the fact that cattleshed manure is now prepared in a most crude and primitive manner in our villages and only half the cattle dung is used for manure preparation. The writer has pointed out elsewhere* how by effecting simple improvements in the existing methods of cattleshed manure preparation, with special reference to sectional filling of trenches and cattle urine conservation, it will be possible to increase the quantity of manure prepared by nearly 50% and the amount of nitrogen contained by nearly 100%. By adoption of such improved methods it would be possible to add an additional 10 lakh tons of nitrogen to the soil, which would mean an increase in our food production by nearly 10 million tons per year. The main object of the Village Compost Scheme now in operation in different provinces and states of India is to achieve the object of increasing manure production in villages by a total aggregate amount of 100 million tons and to add another 10 lakh tons of nitrogen to the soil by proper collection and utilization of all waste materials available in the villages and farms of this country.

Tree Planting Campaign

It is possible to increase the quantity of cattleshed manure produced in our country by an additional 200 million tons by putting an end to the prevalent practice of burning cowdung cakes for fuel. This could be done by supply of alternative fuel to villagers, by starting village plantations consisting of quick-growing fuel trees. *Prosopis juliflora* (Vilayati Khejri) has been tried with great success in the desert and arid tracts of India. It is a drought

*Indian Farming

resistant quick growing tree which comes to a good height and girth even within 4 to 5 years time. It can also be used for purpose of fencing. It has got the advantage that its leaves are not eaten by cattle and hence the tree can be grown with less protection than others. The pods provide fodder for cattle. Babul *(acacia arabica)* is a common plant which grows well even under low rainfall and yields both fuel and fodder. *Leukania glauca* is a smaller plant which grows up within a year and when grown close together has been found to provide a good source of fuel for villages. This plant has been tried out on a big scale in the Guntur area of Madras Province.

Tree planting in villages should be done on a cooperative basis by the combined labour of the villagers and by utilizing all the vacant spaces available in and round about the villages and farms. Wherever Gaon Sabhas and Village Panchayats exist, these should prepare plans for systematic tree planting for fuel each year, so that in 4 to 5 years time a steady supply of fuel becomes available. The Gaon Sabhas should see that in proportion to such extra fuel becoming available the quantity of cowdung burnt is progressively diminished, till the practice is ultimately abolished.

Town Refuse Compost

In addition to village refuse which forms the main bulk of manure supply to our land at the present time, there is an untapped source of manure in the *Katchra* and nightsoil of our urban areas. There are nearly 5,000 towns in India, with a total urban population of about 100 millions; and by proper utilization of the waste material available in the above towns, it would be possible to prepare nearly 100 lakh tons of good quality manure. Under the Town Compost Scheme at present in operation in India, about 7½ lakh tons of compost are at present being prepared by about 650 towns. The Central Manure (Compost) Development Committee appointed by the Government of India in March 1948 for the purpose of preparing plans for expanding Compost production in the country, have recommended that Provinces and States should introduce legislation to compel municipalities and local bodies to convert the whole of their refuse material into Compost. Legislation on these lines has been already passed by the Central Provinces and Berar Assembly and is being introduced in the current session of the Bombay and East Punjab Assemblies. If all the provinces and states introduce such legislation, it would be possible to prepare nearly 100 lakh tons of good quality compost manure per year from the above source alone. Town Compost is applied mainly to vegetables, potatoes and fruit crops and the application of 100 lakh tons of manure could be expected to increase our production of the above food crops by nearly one million tons per year.

Sewage and Sludge of Urban Areas

Reference should also be made in the present connection to the large quantities of Sewage effluent and sludge that are at present available in our urban areas, but practically go to waste unutilized. In most cases the sewage is let into the sea and the sludge is used for filling up low lying areas. There are nearly 25 towns in India fitted up with the underground sewerage system

and there are a large number of others in which sullage water (from surface drains) is available for utilization. The total quantity of sewage and sludge produced in our urban areas is estimated at about 500 million gallons per day and by the method of intermittent irrigation it would be possible to apply the sewage effluent to one million crop acres of new land, which can be expected to increase our production by about half a million tons per year. While utilizing sewage for growing crops, it would be advisable to omit root crops and low lying vegetables, since these are likely to carry bacterial contamination; but crops which are cooked before consumption can safely be grown.

Summary

To summarize the above facts, our indigenous supplies of manures which have not been utilized so far and the extra food that can be produced by systematic utilization of the above sources would be as follows:—

Table 2

Type of manure.	Potential capacity. Tons.	Extra food production. Tons.
1. Collection of extra refuse available in our villages and farms.	50 millions.	2 millions.
2. Conservation of cattle urine by absorption in earth or refuse	50 millions.	2 millions.
3. Tree planting programme and saving of cowdung now being burnt.	200 millions.	7 millions.
4. Town refuse compost.	10 millions.	1 million (vegetables, potatoes and fruits)
5. Sewage and sludge.	(1 million acres)	0.5 million.
6. Oil cakes–inedible.	0.5 million.	0.2 million.
7. Chemical fertilizers (500,000 tons)	0.5 ,,	0.5 ,,
		Total: 13.2 million tons

The question of oil cakes has been already dealt with. In view of the serious deficiency of concentrates in India and the low milk production of the country, it is doubtful whether this source could add appreciably to our present supply of manure. As regards chemical fertilizers, the present production in the country is of the order of 50,000 tons and imports are of the order of 200,000 tons. The proposed Sindri factory and expansion of Travancore Factory may raise the supply to a level of 500,000 tons in a few years, but even at this level, the extra food production due to this source would be of the order of 500,000 tons only. It would therefore be seen that if our present food deficit of about 5 million tons is to be met, special attention should be paid to the development of items (1) to (5) in Table 2

above, which are all indigenous resources which do not require much capital for their development, but need only proper organization of our village and town Committees for the above purpose. The above indigenous sources can easily help to increase our food production by about 5 million tons per year within a year or two, if an all-out effort on a national scale is made in this direction. To achieve the above object it is necessary that Gaon Sabhas and Village Panchayats should be constituted in each group of villages and these Sabhas and Panchayats should undertake the responsibility for the fulfilment of targets of increased manure and food production fixed by their Provincial Governments. The extra food so produced should be purchased by Government at "guaranteed" prices fixed in advance in consultation with the Gaon Sabhas, so as to allow a fair margin of remuneration for the manual labour involved in the cultivation of crops, at rates equal to those paid for manual labour employed in industrial enterprises. Only on this basis, would our village population be tempted to produce substantially more food and hand it over to Government for supply to the urban population, and only thus could black market be effectively controlled.

ESTABLISHMENT OF REGULATED MARKETS

By: T. T. Mulwani

Need for Systematic Marketing

MARKETING plays an important part in the national economy of the country. The process of agricultural production cannot be regarded as complete without the sale of the produce. One sided reform of higher agricultural production alone cannot profit the tiller of the soil. Side by side with the progress in cultivation methods, an advance should be made towards efficient sale of his produce. Without a developed marketing system the farmer labours under distinct disadvantages in as much as his sales are so many isolated acts without any plans. He sells immediately after the crops are ready due to pressure of his creditor to return the loan. Frequently he has neither the facilities of marketing nor the business ability. Even if the production side is strengthened and cultivation improved the peasant would not gain much as the benefits of better farming would probably be reaped by middlemen intervening between them and the ultimate consumers under the present system of marketing.

Agriculture is dependent on many factors over which man has no or little control. We can never be sure of the supply, not to mention the quality of the farmer's crops. We cannot regulate agriculture at will. But if we cannot determine production and supply, we can through regulated and scientific marketing arrange the distribution in such a manner as to partly counterbalance the vagaries of nature.

Present System of Marketing

Agriculture being industry of slow turn over, the farmer requires financial assistance to bridge over the gap between the sowing and harvesting of the crop. Again the produce of his land does not

always suffice for the whole year and he is compelled to seek the assistance for subsistance as well as for commencing his agricultural operations in the following seasons. Borrowings made by the cultivator are taken before the commencement of cultivation operations from middleman, village beopary, factory owner with undertaking that the produce after the harvest will be sold to him or through him. The real evil is the tendency of these intermediaries who exploit the ignorance and helplessness of the farmer and to increase their profits by manipulating the rates. The farmer is accustomed to being exploited by the agents of the landlords and by the village mahajan, hence he has not stuck out against the intermediaries boldly to keep down the glaring inequalities in the prices. The abuses which have crept in are real but these are mainly due to lack of control and organization of the market.

With whatever limitations or the natural calamities the farmer who raises a good crop brings it to *arhatiya* (Commission agent) to market his produce as soon as it is harvested. The *arhatiya* selected is generally the one with whom the grower has already had financial or business relations. Although there is no compulsion on the seller to take his produce to the commission agent from whom he has provisionally secured advances or loan in kind or cash, nevertheless the fear that the financial accommodation may be withdrawn in the future induces the cultivator to trade through his creditor. If the seller decides not to dispose of his produce on that day, he leaves it with the arhatiya who stores it for him until sold.

The produce left with the arhatiya is either stipulated to be sold at the latter's discretion or a price limit is given by the owner, below which sales are not to be made. There is in every market unwritten code of conventions which govern the business. The *arhatiya* is supposed to be responsible for safeguarding his interests and to see that the sale is completed in conformity with the recognised market usage. In no market there is any authority over the arhatiya to see that the seller is fairly treated, that no unauthorised deductions are made, or that the arhatiya does not in any way subordinate the interests of the sellers to his own profit, there is no one to whom a seller can report if he thinks he has been cheated and who can decide matters in dispute. Nor is there in any market any regular organisation to keep a general eye on the interests of the sellers, to see that none of the market practices is prejudicial to their interests or is unfair to them.

Present Markets

There is actually no organization—public, municipal or district local board, in the jurisdiction of which these markets are situated, which has any plan to help the producer in the systematic sale of his crops. The markets are owned by traders or municipalities and often there is neither the enclosure nor the protection against rain or storm. The traders who get huge income from producers in the shape of commission charges, over weighments and interest charges, etc. never bother to render necessary facilities to their clients. The municipalities have never cared to review the difficulties experienced by the cultivator who brings his produce from a great distance. They are interested to get the octroi charges and are more inclined to obey the dictates of trading class.

Markets, as a rule, have not been established according to each commodity. Present markets may be broadly classified into three main groups namely (a) primary, (b) secondary, and (c) terminal. From producers' point of view the primary and secondary markets are important and in order to benefit the cultivators at large these two classes should be reformed.

Primary Market:- These markets besides assembling figure in retail distribution as well. It has been estimated that there are about 22,000 primary markets in India. Bengal, U. P., Bihar, C. P. and Assam are the areas of higher concentration. A wide range of commodities consisting of foodstuffs and other common necessities of life are brought to and sold in these markets. Business in these markets is mostly transacted between producers and merchants. Cultivators, landlords and village merchants bring their produce to these markets.

Certain fairs particularly in livestock have acquired some importance in the trade in agricultural produce. It has been estimated that the livestock and produce fairs held at different places number over 1700. Sufficient trade takes place on these fairs.

Secondary Markets–are wholesale daily markets usually situated at Central place in district or taluka headquarters or near producing zone or railway station. The total estimated number of wholesale daily markets in the various provinces and states is over 1500.

Terminal Markets:— Markets in which the produce is finally disposed of direct to consumers or processors or is assembled for shipment to foreign destinations. Assembling, collecting, packing and storing are all done here and they mostly concern the consumers.

Market Charges and Malpractices

The market charges vary from place to place even in the case of same commodity. Market charges levied in the market go under a variety of names in different markets; but generally they fall under the main heads of:—

(1) Taxes and tools (levied by municipality)
(2) Arhat (Commission)
(3) Dalali (Brokerage)
(4) Handling charges
(5) Tulai (Weighman charges)
(6) Charges for other services (including the arhatyas, clerk or munim and other servant charges.)
(7) Dharmada, Gaushala
(8) Quality allowance
(9) Weight allowance
(10) Temple charges
(11) Village school
(12) Sample

Some of the above charges are paid in kind while in case of others cash deductions are made at the time of settling the account.

The malpractices differ with the commodity and place of sale but the most common ones are enumerated below:—

(1) Wrong weighments
(2) Undue deductions in weight
(3) Price reductions by going back from the original terms of the bargain
(4) High commission and brokerage charges.

The producers' share in the consumers' price (%) in case of some important commodities is given below:—

	Wheat	*Milk*	*Fish*	*Eggs*	*Linseed*	*Groundnut*	*Tobacco*
				(in percentage)			
Producer	58-68	66	47.5	58.9	73.7	49.4	42.3
Middlemen & other charges including retailer's margin	32-42	34	52.5	41.1	26.3	50.6	57.7
Consumer's price	100	100	100	100	100	100	100

(The information has been worked out from Marketing reports issued by Directorate of Marketing and Inspection, Ministry of Agriculture, Government of India.)

The producer receives anywhere from 42.3 per cent to 73.7 per cent of the consumer's price. The charges in the process of marketing vary from 26.3 percent to 57.7 per cent which exhibit lack of marketing facilities.

Market Functionaries

The market functionaries are many. Beginning with village merchants and itinerant traders in the primary markets the arhatyas (commission agents), brokers, weighmen etc. play their role in the process of marketing. Under the disorganised system of marketing as it exists today it is difficult to say conclusively as to which of the market functionaries operating are superfluous. Practically every one renders a service and will continue to serve it though at a high cost. An organization of the producers themselves and the reorganization of the markets should, however, help in eliminating some links in the chain of middlemen thereby shortening the latter. There is clear need for licensing some of the functionaries and for controlling other activities.

Regulated Markets-Their Benefits and Establishment

The present lawless markets well known for exploiting the producers must be replaced by well regulated markets in every important commodity producing centre. In these, market charges are to be clearly specified and trade practices duly controlled by market committees fully representative of all the interests concerned. These centres are to be administered and the usages of trade governed by definite rules and regulations under the provision of a market act. In such markets the produce is to be weighed by a licensed weighman and a receipt given to the owner. The commission agent is also required to give a proper receipt when the goods are sold giving the data of sale, the name of the buyer, the rate and all other relevant particulars. A copy of these sale receipts is sent to the office of the Market Committee for reference in case of disputes.

Systematic marketing involves the function of adjusting supply to demand. In order to control supply the whole field of production needs to be managed. A marketing organisation could watch the changes in demand, help in regulating the supply and advise in the fixation of grades and standards. The provincial marketing department should be sufficiently strengthened to initiate and improve the existing markets. The administration of the market act should be under the officer

of this Department who should by his technical knowledge and experience guide the activities of the market committees. The establishment of such markets would go a long way to study all the factors of supply and demand.

The main advantages of such regulated markets are :-

(1) Market charges are clearly defined and specified, excessive charges are reduced and unwarranted ones are prohibited.

(2) Correct weighment is ensured.

(3) Suitable arrangements for settlement of disputes regarding quality, weighment and deductions etc. are made to prevent litigation, safeguard the interests of the seller and smoothen business.

(4) Prompt payment of the value of produce is made by the buyer.

(5) Reliable and up-to-date market news are made available.

(6) Suitable quality standards and standard contract terms for buying and selling can be conveniently enforced.

(7) Reliable statistics of arrivals, stocks, prices etc., can be maintained in a regulated market.

The establishment of properly regulated markets would mark a distinct advance towards the solution of the problem of securing for the cultivator the best possible price for his produce generally and in particular full premium for any superiority in the quality of that produce. His position in relation to the distributors and ultimate consumers of his produce would be greatly strengthened by an improvement in the condition in which it is marketed. The cultivator will thus feel confident that his interests are safe in such a market. This itself would lead him to work better for production of crops and grow only those varieties which fetch better price in the market.

An important question whether regulated markets should be established under ad-hoc legislation or under by-laws framed under the Municipalities or the District Board Acts of the province concerned was examined by the Royal Commission on Agriculture. They were of the opinion that the satisfactory regulation can only be secured by provincial legislation and rules framed thereunder. In case of management under municipal councils or district board it is doubtful that the interests of growers can be safeguarded. The present experience shows that municipalities have failed to protect the interests of producers and the markets are regarded as a source of revenue.

Markets are not only self-supporting but are always a source of income. The market committee constituted by an Act of legislation will have ample funds to look into the improvement of markets and their system of marketing. The sources of income may be enumerated as under:-

(1) Market admission fee.

(2) Sales registration fee or fee on sales.

(3) Yard fee for temporary storing.

(4) Brokers' license fee.

(5) Recoveries of rents etc.

(6) Sale of manure or miscellaneous.

The initial expenditure on land and buildings incurred in starting them can be met from a loan from provincial revenues.

Lay out

The lay out of regulated markets should be on modern lines with better amenities provided for persons using

them. They should enclose large areas with entrance and exit by metalled roads, have sheds for the use of cultivators, brokers and others and arrangements for the supply of water for men and cattle, besides general clean and sanitary conditions. The area should be sufficiently large so that extension may be possible at any stage. A big store yard for temporary storing of grain commodities of a farmer who is not able to dispose of his produce on the same day will both add to the income of market committee and facilitate the producer to get better price by temporarily storing it.

The ideal conditions under which these markets may be established in towns is the construction of market towns outside the residential area. Such market towns should be within easy reach of producers and should have the facilities for the residential accommodation of the intermediaries and wholesale merchants. Different markets such as grain market, dairy market, vegetable market and markets for live-stock, meat and fish with suitable arrangements for each commodity may be constructed in different groups. Such a market town is to be just adjoining the town and Railway Station. If possible Railway siding should run into one side of the market. A central slaughter house for the town is also to be located in the market town. Sufficient arrangement for transport is to be made to regularly feed the retail consumers' centres in the town itself.

Review of Some of the Regulated Markets

Berar was the first to enact special legislation for the constitution of markets under the provisions of Cotton and Grain Market Laws in 1897. Although the law under which Berar markets have been constituted is known as such, the markets in actual practice are used almost exclusively for Cotton. Detailed rules on various points as to regulate the constitution and powers of the managing committees, the levy, collection and disposal of fees, conditions of issue of licenses to brokers, weighmen and measurers, the scales, weights and measures, prohibition of unauthorised markets and bazars were promulgated in a notification issued in 1898. The main defect in the Berar system of market was the inadequate representation given to producers in the market committee. The second defect was that the surplus of market funds, remaining at the end of the financial year was transferred to the district board or municipal committee in whose area the market was situated.

The Bombay Agricultural Produce Markets Act (1939) is an improvement over the Berar system in so far as the constitution of the market committee is concerned. A representation of not less than half its strength is given to producers. It provides that no trade allowance other than an allowance prescribed by rules or by laws made under it shall be made or received by any person in any transaction in the market. This is an advance on the Berar legislation. Under the Bombay legislation any surplus of market funds can be expended only on certain purposes connected with the market which are defined in the Act. The Act is very comprehensive and covers almost all important agricultural products and new commodities can be brought under the purview of the Act by notification of the provincial government.

This increased the pressure of the population on soil. Agriculture became less paying, the cultivator hardly getting subsistence out of it.

The operation of the law of inheritance and succession has led to subdivision and fragmentation of holdings and to more than 70% of the holdings being uneconomic.

What is the condition of Indian agriculture which has to support more than 71% population? It is in the most backward and uneconomic condition. The methods of agriculture are old and primitive and to crown all, Indian agriculture is pathetically dependent on Nature, and is completely exposed to its vagaries. Only about 23% of the total area under cultivation have irrigation facilities. There are frequent failures of crops due to drought, flood and pests. Matters are further aggravated by high cattle mortality and inadequacy of subsidiary industries.

Instability of agricultural prices is another cause of indebtedness. The absence of a minimum guaranteed price renders agriculture highly precarious. It is rightly observed that "without price stability, we are building on sand." The agriculturist must be assured a minimum price if he is to interest himself in improving agriculture by adopting modern methods of agriculture. The C. P. Banking Enquiry Committee observed that the feverish fluctuations in the price of cotton were the main cause of the heavy indebtedness of agriculturists in Berar.

According to this Committee, the main causes of indebtedness are the great uncertainty of agriculture and extreme variations of crop outturns and prices, high rates of interest and the absence of the habit of thrift and proper facilities for investment.

It is possible to add further to the list of causes of indebtedness but the question of supreme importance is how is this evil to be eradicated. Legislative measures have failed to cure it. The Usurious Loans Act, Debt Conciliation Act, the Money-lenders Act, the Protection of Debtors Act, and the Debt Relief Act, were enacted one after another, but usury with indebtedness following in its wake, is still rampant. It can not be denied that these measures brought some relief to the agriculturists but they could not root out the poison of indebtedness.

It is not meant to convey here that debt legislation is not necessary. It is necessary not only to control by legislation money-lending and rates of interest, to scale down debts where they are unduly heavy and spread their repayments over a number of years but also to provide the agriculturists with long-term finance to repay the debts through a State or State-sponsored agency or cooperative land mortgage banks. The legislation should also be so designed as to prevent the recurrence of the evil.

Above all, the most effective remedy is to provide an alternative credit agency to make the resort by agriculturists to money-lenders unnecessary. And the only such agency is the cooperative movement which has been universally acknowledged as the only suitable agency for agricultural credit. But the movement is progressing at a slow pace. It has so far reached only 3% of the population and supplies about 6% of the credit needs of the agriculturists. A rapid and planned action is needed to make the cooperative agency a ubiquitous competitor of the money-lender.

Co-operative societies need to be fully harnessed in the work of agricultural reconstruction. They deserve to be fully utilised in all "Grow More Food" programmes. The State should direct the agricultural development plan and leave it to be executed, with active State assistance, by the cooperative organisations which are people's own organisations. Small peasants should be induced and if necessary compelled by the State to pool their uneconomic holdings and cultivate them cooperatively. 'Food' is a matter of first priority today and uneconomic cultivation should no longer be allowed to come in the way of increased food production. Persons with very large holdings which they cannot properly cultivate should be persuaded or compelled to lease out the land which they cannot cultivate efficiently to cooperative farming organisations.

Debt legislation, it will be readily granted, is a preventive measure which requires to be reinforced by curative measures. The real cure for indebtedness lies in increased agricultural production and its improved marketing thereby putting the agriculturist on a surplus economy. As has been observed by a well known economist 'the problem of Indian economy centres round the fuller utilisation of her resources both human and material.' The pre-requisite for development of agricultural resources is finance-both crop and development finance,-and the best agency for providing this finance is the cooperative agency. Exploitation of the agriculturists by capitalist agencies can only stop if the agriculturists have their own agencies for undertaking activities right from the stage of production to the stage of processing and marketing of their produce. The agriculturists should also have their own, that is, cooperative agency for the supply of necessaries of life and agricultural requisites including improved implements and machinery. Another remedy is to supplement the income of the agriculturists by organising cottage industries. Agriculture is seasonal in character and gives only seasonal employment to the agriculturists. In the opinion of the Royal Commission on Agriculture, the agriculturist gets about two to four months spare time in a year. Here again, cooperative societies can play an important role. They can undertake the development of subsidiary and cottage industries and help in the purchase of raw materials and disposal of finished products.

All effort to increase the level of agricultural income would be wasted if the habit of thrift is not inculcated in the agriculturist. The Famine Inquiry Commission (1945) in their final report observe, "Finally we attach great importance to the cultivation of the saving habit and the avoidance of excessive expenditure on ceremonial functions, on litigation and the like. The experience of the decade following the last war when there was a general rise in unproductive expenditure, provides a warning which should not be ignored. The ground won during recent years... ....would be lost if, as consumer goods become more plentiful and cheaper, habits of extravagance and wasteful iexpenditure should grow."

The problem of rural indebtedness s only one of our many rural economic problems and it cannot be liquidated unless the various factors contributing to it are removed. The real solution of

In C. P. there are two types of regulated markets:—

(1) Markets regulated and controlled under the C. P. Municipal Act 1922, and

(2) Markets regulated under the C. P. & Berar Cotton Markets Act 1932 and C. P. & Berar Agricultural Produce Markets Act 1935.

The management of first type is in the hands of trading class without any representation to producers or cultivating class. The second type gives a representation of not less than half its members to producers.

In East Punjab, the Punjab Agricultural Produce Markets Act 1939 has been made applicable to a very large number of commodities with little attention to regulating the market practices and charges.

In Madras, Commercial Crops Market Act 1936 has been amended several times to make it useful.

Amongst the States, Hyderabad, Mysore, Gwalior and Baroda have passed suitable legislation to regulate markets.

In the remaining provinces and states necessary legislation has not been passed. The experiences gained in the working of these Acts at places where these have been established may serve a good guide for the framing of Act and serve the interests of producers at large in the remaining provinces and states.

The places wherever regulated markets have been established the sales are more or less restricted to one commercial crop. "The object of these regulated markets is to secure to the cultivator better prices, fairer weighment and freedom from illegal deductions in addition to enhance the reputation of Indian produce by standardization and grading. If the establishment of regulated markets can secure these in respect of cotton, groundnut or tobacco, it can do so equally in case of other agricultural and livestock products. Although the primary object of properly regulated markets may be the protection of the cultivator, they have also their uses from the point of view of the purchaser and the public. The cultivator cannot be held guiltless of malpractices. Tricks of trade such as the adulteration and mixing of the produce are not practised only by middlemen nor are they by any means confined to cotton, groundnuts or tobacco. There is no measure more calculated to prevent them, in so far as they are due to the seller, than the establishment of properly regulated markets and the buyer is much more likely to obtain satisfactory quality in such markets than by any other method of purchase. The regulated markets should be extended to all agricultural and livestock products".

The necessity of establishment of regulated market for every commodity everywhere is long overdue. A correct and proper step to encourage fair dealing and thus helping the producer in more production cannot be postponedany longer. Those who have the interests of cultivators should strive to provide for the establishment of market committees by an Act in their provincial legislatures which form the main machinery through which the law for the regulation of markets is to be carried out.

THE PROBLEM OF RUAL INDEBTEDNESS

By: D. A. Pundlik

RURAL indebtedness is a deep-seated malady affecting our rural economy. Attempts have been made to remedy it by legislative and other measures but these have proved to be palliatives only. A lasting solution for it is not yet in sight.

Allied with rural indebteness, is the question of poverty. The two are inseperable. It is difficult to say which is the cause and which is the effect. It is a vicious circle; the agriculturist borrows because he is poor and he is poor because he borrows.

Various estimates of rural indebtedness of India have been made. It was estimated at Rs.300 crores in 1911 by Sir Edward Maclegan. From the estimates made by the Provincial Banking Enquiry Committees of their respective Provinces, it was found to be Rs. 900 crores, while the Agricultural Credit Department of the Reserve Bank of India estimated it at Rs.1,800 crores in 1937. The economic depression of the thirtees was followed by the boom period ushered in by world war II, and the rise in prices of agricultural produce after 1942 led to a substantial reduction in agricultural indebtedness. 'This appears to be true particularly of cultivators with large holdings and a considerable proportion of those possessing medium holdings but the indebtedness of persons with small holdings may not have been reduced substantially in many parts of the country.'

The world war I was followed by the boom of agricultural prices which crashed in 1930. There was a steep fall in prices followed by slump in land values with the consequent deterioration in the economic condition of the agriculturist and mounting up of his debts. The problem created by the depression has been largely solved by the present boom period. But it should not be left to the economic laws to work out their tardy solution. A unique opportunity has been presented by the present day high prices to put the agricultural economy on a sound basis.

How have these appalling conditions come about? Every student of Indian economics knows how with the advent of British rule in India new forces were introduced which threw the country's economy into the melting pot. 'The self-sufficiency and solidarity of the village life disappeared. Cash economy replaced barter.' Agriculture began to be commercialised and land values began to rise with the consequent increase in the credit needs of the agriculturist and the inevitable resort to the money-lender. The agriculturist thus found himself in the clutches of usury which has proved the bane of our rural economy. Due to exhorbitant rates of interest and other factors, the agriculturist could not repay his debts. He began to be gradually dispossessed of his land and thus from father to son and to succeeding generations, the life of the agriculturist became one unending tale of woeful indebtedness and poverty.

As a result of the factors described above, the village economy became thoroughly unbalanced. Village industries declined and the displaced atisans joined the ranks of the agriculturist. There was natural increase also in the population.

our rural problem lies in having a sound economic system aiming at raising the standard of living in rural areas, and in fuller utilisation of the cooperative movement in building up such an economy. The cooperative credit movement should be reorganised in order to enable it to provide credit to all credit-worthy agriculturists within a period of five years. For this purpose, the size of primary credit societies will have to be enlarged, otherwise the number of societies to be organised will run into tens of thousands and it may prove to be a very difficult task. With a view to reach a large number of agriculturists, the societies will also have to be allowed to deal with non-members, at least nominal members by temporarily modifying the normal cooperative practice. The implementation of such a five-year plan will require State-aid on a liberal scale.

If the cooperative movement is to achieve this end and to serve all the credit-worthy agriculturists in need of finance, it will be necessary to ensure that the cooperative credit structure works at maximum efficiency. The working of all cooperative credit organisations—primary credit societies, Central Banks, the Provincial Bank—will have to be reorganised and made more efficient and economical. It will also be necessary to coordinate their working so as to have a well-knit cooperative credit movement with the Provincial Bank at the top and the other cooperative credit institutions as its coherent parts. This is by no means a blue-print of a plan for the re-organisation of the cooperative credit structure. What is intended is to point out the way to a greater utilisation of the movement in freeing agriculture from indebtedness.

But the problem cannot be solved by merely supplying cheap credit. As has been already pointed out, the cooperative agency should also undertake supply of domestic necessaries and agricultural requisites, marketing of produce and should assist the agriculturist in increasing agricultural production. The cooperative society should also be an effective instrument of social and moral improvement of the agriculturist besides being an agency for his economic well-being.

In free India today the question of improving rural condition is receiving the most earnest attention of the national government. Schemes of rural development are being prepared and put into operation. It is quite obvious that the removal of poverty and indebtedness must form an important part of such schemes. The agriculturist must be freed from these handicaps if he is to be interested in any scheme of development.

FOOD PRODUCTION AND DEVELOPMENT OF AGRICULTURE

By : R. D. Mehra

I

IF we wish to make our freedom real, we as a people must learn to be self-reliant, each one of us—the weakest, the humblest, the lowliest—has a definite role to play in making independence a living reality. As long as we depend upon the Government to solve all our problems, our claims to having achieved freedom become meaningless. Following the advice of the great Mahatma, we must turn our imagination inwards.

India has entered upon an era of political freedom after a hard struggle for 30 years. However, in its wake, numerous problems have arisen—large scale migration of refugees, rising prices of the necessities of life, education, medical aid, industrial unrest, communal discontent. Above all is the desperately urgent problem of food shortage which must be solved if the nation is to live without the starkness of our shortcomings being shown up more clearly than it has been already.

The main consideration at the moment is the food and agriculture policy for mobilizing the productive capacity of a country upon which nature has showered her bounties with a liberal hand but man has, alas, failed to profit adequately by them. Notwithstanding these potentialities, dependence on foreign sources for the supply of foodgrains is yearly increasing and against 3,000,000 tons imported in 1948 the amount in the current year is likely to overstep the 4,000,000 tons mark. This would mean a severe drain on the country's finances, crores of rupees being spent on imports of food which could be used with profit on industrial development.

Why should we spend upwards of Rs. 150 crores every year on food grain imports alone? Have we ever realised that if war came—a contingency which cannot be left out of reckoning by any set of prudent administrators—and all food shipments were suspended indefinitely, not only will our national life be seriously jeopardised but India will have to face relentless and inevitable starvation. This is a position which no economically conscious and virile nation ought to tolerate; it cannot obviously be allowed to continue. It must, on the contrary, strengthen the will of the people for unprecedented and sustained efforts and a living faith in the country's great destiny and unwavering determination to reach a set goal.

Better Adjustment between Supply and Demand

In agriculture, the first need, if the tragic lessons of recent times are to be learnt, is self-sufficiency in food. A 'Grow More Food' campaign attends to this, but as it was hastily improvised and lacked real motive power, aim and definite direction in execution, its claims before the Consultative Committee of Economists that agricultural production could be stepped up 50 per cent in a few years and 100 per cent in five to ten years to

support a 50 percent population increase were falsified by events. Mr. D. R. Sethi, Commissioner of Agriculture, Government of India, was more realistic. In a Radio talk he estimated annual requirements at 60,000,000 tons of cereals and 12,000,000 of pulses and doubted whether Indian agriculture, in its broader sense, could meet this demand within a measurable period of 15 or even 20 years. He considered that India, as a result of growing pressure of population, has nearly reached the maximum potential of land which in existing circumstances, could be profitably used for crop and fodder production. Perhaps the planners did not take full cognisance of the fact that such increased output was dependent on the necessary facilities being made available. How vitally important it was for them to approach the problem in a spirit of war emergency, plan crop adjustments and food-stuffs to a better balance with demand and how imperative it was to substitute order for subsequent chaos, would be seen from the fact that mainly due to maladjustments the country's food stocks had decreased in January 1947 to a mere three weeks supply and, despite a quota from the Emergency Food Council and urgent efforts at Controls and Procurements, India was hard put to feeding 171 millions of her rationed population.

Planning for food today must take into account not only existing deficits on present scales of production and consumption but also increasing deficits with a rising population and the need for better nutrition as the quality of food is below the required standard and often unbalanced. A proper appreciation of land potential, much deep consideration and still deeper persistent effort, to bring about maximum production from the extisting land, should become the prepossession of the Government, while conversion of cultivable waste land or land cleared of forest into cultivable land by the skilled hand and the indomitable tractor is eagerly awaited. Above all, development of agriculture must be considered in relation to the plan for industry, commerce, finance, health, education etc. Chief prominence must be given to the life of majority of the people who are the creative earners and produce by far the greatest portion of the country's wealth and upon whose volume of agricultural production mainly depends the output of manufacturing towns and the internal trade of the homeland. Every economic problem, in the widest sense must, therefore, put the cultivator in the centre of the economic fabric for the working of agricultural production and distribution on a preconceived pattern towards the desired end.

It is also event that to be successful, efforts to step up production presuppose the wholehearted co-operation of all classes of the people on a scale and of an intensity never yet dreamt of in the Indian philosophy of new agriculture.

New Era in the Land of Inspiration

We stand at the dawn of a new era. Circumstances in the country have changed since the lowly control over the subjects of Agriculture, Fisheries, Public Health, etc. was made over to Indians. Not only have we now the Provincial Governments and a Central Government of our own in the true sense of the word, but much consolidation of the Union as a whole through the linking of the States with the Centre and regrouping of the States into larger administrative Units, has been achieved, bringing them into line with the relation-

ship which extists between the Provinces and the Centre, thereby ensuring uniformity of administration.

Here then is an opportunity for reconstructing the sources of production and distribution according to our needs and desires and in a manner best calculated to promote moral, social and economic reforms in relation to the actual dynamic of the present situation. We must mobilize on a war basis or take the risk of our whole economic structure collapsing. No illusions are held as to the prodigious task which lies before the Government of India in bringing to full production the potential resources of the country in industrial, commercial and social fellowship. With the courage and vision of our leaders, some of the difficulties have already been surmounted. But the need of the hour is to transmute all major items into revolutionary activities, consistently with peace and security of the country, just as Russia did, in turning millions of acres of steeple land into smiling fields, if prosperity and a high standard of living are to be attained.

Reliance on Local Effort

If some unexpected difficulties of interrelated national and inter-national problems have lately been monopolising the attention of even the most resourceful of our Ministers, what, it might be asked, are the people doing to tide over the evil of inflation, food and cloth famine or alleviate the condition of their fellow countrymen—oblgations wholly essential if we are to make a joint effort? In regard to food shortage, for example, the public-minded among us could urge our cultivators to grow food instead of commercial crops; to plan their cultvation in such a way as to make themselves self-sufficient in food and to grow, wherever possible, a surplus for export to deficit areas. We could teach the cultivator methods of increasing soil fertility, arrange for supply of better seeds with higher germinating percentage, get him to prevent soil erosion and attacks from insect pests and to improve water supply by digging of wells, tanks and canals. We could instruct him in the method of making compost in huge quantities and make available improved implements and even the results of agricultural research. Again, if a few enlightened individuals in each village took pleasure in explaining in an inexorably simple style to a group of farmers that certain branches of their business could be more profitably conducted by joint effort with a common purpose in an association than by individual action, the country-side would soon be throbbing with fresh vitality, the task would give such propaganda a relish which prosaic economics may altogether lack.

When these problems are considered en masse and on a nationwide scale they seem to be too big and require substantial capital resources. But if a number of philanthropists of non-official patriotic organizations were to interest themselves, guide and take a vigorous initiative, the logic of events would soon lend itself to increased productive capacity and well-being of the peasant proprietary, upon which all our thoughts are concentrated at the moment. Further, there are various ways, as suggested by Gandhiji, and his two erstwhile Lieutenants, Pandit Nehru and Sardar Patel, of saving food-grains and preventing waste, of growing vegetable in towns and villages and by balancing one's diet and eating only what one needs. Are we following their advice? Much of the food and cloth shortage is undoubtedly due to hoarding by the blackmarketeer. But, provided there is no one to buy in the blackmarket, all this food and cloth will find its way for open sale.

PROVIDING THE INCENTIVE FOR INCREASING FOOD PRODUCTION

By: Dr. E. M. Hough

IN all the talk about the need and the methods for increasing food production—and there are few material problems of greater significance and urgency at the present day—sight is too often lost of the key problem, the psychological factor. In the last analysis the success of all the plans and schemes hinges upon the possibility of enlisting not only the willing and intelligent but also the enthusiastic support of the cultivator. The apathy of the man at the plough can defeat the best-laid plans of the Centre, and the conversion of that apathy into zealous co-operation deserves top priority in the effort to increase the supply of food.

It is not only the evil-doer who fails to cause the great wheel of the Third Discourse of the *Bhagavad-Gita* to continue revolving. It may equally well be indifference as to whether it revolves or not, for oneself or for others, especially if those others be strangers and one's imaginative sympathy unquickened. The cultivators of our country in their millions-predominantly illiterate, impoverished, often indebted, dwelling in crowded discomfort, undernourished, a prey in many cases to preventible disease, in most to superstition, with interests too often bounded by the physical horizon—need the demonstration that life can be rich, full of interest and hope, an absorbing drama unfolding in which each has his self-respecting and indispensable part to play.

The agriculturist, then, needs first to be made to feel that life is worth living. Unless he values life for himself beyond the mere biological urge to physical survival, why should he exert himself in order that vague abstraction, the World, may have the necessary wherewithal to live! A twofold effort, material and cultural is required for the enlistment of the cultivator's whole-hearted support without which all the increased food production plans must fail of full effectiveness.

There is already recognition, on the part of a large number of India's leaders and philanthropists, that the living conditions of the masses have to be improved and that a fairer share of the fruits of his labour must be secured to the producer. The Co-operative Movement holds great possibilities in that direction, in the fields of cheap and controlled credit, housing, health and village improvement; in raising the quality of production by better agricultural practices and in the more advantageous disposal of produce, as well as in savings to the producer along with other consumers by the joint purchase of requirements.

Protection from exploitation by money-lenders and middlemen and opportunities for the profitable employment of his leisure are other important economic needs of the cultivator, but training in home-making for his womenfolk must be given a prominent place if the efforts for the augmenting of his income are to profit him and his family very much. This point was stressed by Mr. F. L. Brayne, I. C. S. (Retired) in the arresting article on "Women and Indian Villages"

which he contributed to *The Aryan Path* for June 1946, in which he presented a higher standard of home life, the ideal of a nice home and healthy, happy children, as the incentive for the villager to exert himself to improve his lot. He envisaged an intensive programme of "simple homely 'uplift'," which with proper enthusiasm, initiative and co-ordination could transform the village providing ventilators, cooking ranges with chimneys to take away the smoke, hey-boxes instead of dung-cake fires, flowers around the houses, better roads and wells and comfortable sanitary arrangements and surroundings.

The training of women to teach the village home-makers is a first need in connection with this effort, which cannot be expected to bear full fruit until the number of domestic training schools throughout the country is vastly increased. The Kasturba Gram Sevikas will be able, no doubt, to effect marvels here and there in raising the standard of the village home, but in a country of so many hundred thousand villages a vastly greater contribution will be needed than they, with the best will in the world, can be expected to make.

But even if the possibility of better home could be sincerely and convincingly held out to all our cultivators of the soil as an attainable ideal, though it would undoubtedly give a great impetus, it would not be enough for the full success of the increased food production effort without the other part of the programme to make the good life possible for all the now underprivileged people of our rural areas.

If we set the ideal too low, offering only individual well-being or even the prosperity of a particular village as the goal, we shall have failed not only to show life to be really worth living but also to bring home to the villagers their integral unity with the rest of their countrymen and with humanity as a whole. It should be possible to arouse at least as much enthusiasm for the food production effort as was aroused for the war effort in beleaguered Britain, but only on condition that we give the cultivators the conviction of world unity and an appreciation of the higher values which life serves. The profit motive, even if linked with the desire for material well-being and domestic happiness, will go only so far.

The cultural enrichment of the cultivators' lives is indispensable to their seeing their work in true perspective and setting themselves in right earnest to its performance to the best of their power. This demand would be indeed discouraging in view of the wide-spread illiteracy and the difficulties in the way of its speedy liquidation if illiteracy connoted ignorance or if literacy were the only key to culture. Fortunately, neither proposition is true. Literacy is desirable provided it is followed up by opportunities to exercise the new skill and guidance that will teach the newly literate adult to do his own thinking and not succumb to the "compelling power of print," with which interested groups, political or economic or sectarian, are almost certain to attempt to exploit him. If such guidance to true values is not forthcoming, the power to read is only too likely to prove to be of rather dubious worth.

In any case, such guidance need not wait upon the attainment of literacy, fortunately, since to give it is not only a humanitarian act but also a power-

ful if indirect contribution to the food production drive. To point to the present-day villagers' cultural need is not to derogate from the value of the cultural inheritance which they share with their more favoured fellow-citizens. To the extent that the old traditions of the great epics, the *Ramayana* and the *Mahabharata*, the *Kural* of Tiruvalluvar, poems of Kabir or of his congeners in other languages or the sayings of the Prophet of Arabia, of Ali and the Sufi mystics are part of the living tradition of the villagers, the cultural foundation is well and truly laid. The villagers have for long been distinguished for the sterling qualities rooted in those traditions which many of them have shown forth, as very many still do. But superstition is rife, and a depressing picture has been drawn of the typical Indian village by more than one Indian writer, though occasionally one, like Shri K. S. Venkataramani, idealizes the simplicity of village life and its rhythm of work and leisure. It cannot, however, be denied that many of the better educated, abler and more energetic people of the villages have deserted them for the cities, or that, deprived of their natural leaders, the villages have in too many cases fallen into a lethargy and a dreariness above which their people have to be helped to rise.

The handicaps to the cultural effort are many, of which the poverty of the people is one of the chief and poor communications is another. But wonders can be wrought by as earnest planning on cultural lines as has gone into the work, for example, of the All-India Co-operative Planning Committee, and as serious effort to implement the plans as has been made by certain Provinces in connection with that Committee's recommendations.

What are the media through which a realizing sense of the people of other Provinces, other countries, other continents, their problems and their contribution to the world's cultural treasure can be brought to the villager of Gujarat, Tamil Nad, of the Punjab or Berar?

India has a great initial advantage for the cultural undertaking in the fact that the agriculturists do not normally live on isolated farms, as in the United States, but in compact villages, where it is possible to reach many with a single effort, as for instance in the visits of travelling libraries and the encouragement of village reading circles, to which all are welcome and at which the literate will share with others the news and worth-while articles or longer works to which their better education gives the key. A village radio can bring good music and also travel accounts and talks on a variety of cultural as well as practical themes, in language suited to the village audience. Educational films can also bring their message, and one worth-while picture a month, brought by a travelling van, could play a great educational role. The old-fashioned stereopticon slides are not to be despised as an accompaniment to talks about life elsewhere.

The definite effort should be made to acquaint the village people with the great writings claimed by other religions, while keeping up their familiarity with and appreciation of their own, impressing upon them the fact that the world's great scriptures, like the example of its noble and selfless lives, are the monopoly of no religion but form part of the treasure which belongs to all men everywhere.

A people's theatre movement that would serve the cause of culture and mutual understanding, not of propaganda,

could also do much to widen the horizon, to deepen the villager's understanding of problems of his own and other countries and to deepen also the sympathy that flows from understanding.

With the revival of the traditional village Panchayats, so long shorn of their dignity and powers by the centralizing of the Government under the alien rulers, a definite effort should be made to enlist the active participation of these village dignitaries in the effort to broaden the cultural outlook of their fellow-villagers and their own. The Cultural Planning Committee which I see as most desirable, not only for the food production effort but also for the unity of India and the cordial relations between India and the rest of the world which represent an important factor in world peace, may well decide upon a plan for training carefully selected village leaders, one or two to a group of neighbouring villages, to absorb the larger outlook in intensive courses and to carry all they can of it back to their part of the country in a spirit not of superiority but of sharing. Those who have had a better education than most of their fellow villagers, or even returned soldiers would in many cases be suitable trainees for this cultural drive.

It is futile to postpone the cultural undertaking until the other problems are solved. Interim measures will no doubt be necessary but the real problem will never be solved practically until our agriculturists who form the bulk of the population catch the awakening vision of common interests and common difficulties, a common culture and a common need. Only then will human brotherhood be realised and the privations threatening fellow-men anywhere be felt as a challenge to the best endeavours of each and all.

INDIA BEGS FOOD—A PATHETIC PARADOX

By: K. M. Desai

IT is highly paradoxical that India, not many decades back an exporter of food, has now to go about with a beggar's bowl for food to foreign countries. It is a tyranny of fate that India should have to face the unprecedented calamity arising out of general food shortage at a time when she should have amply enjoyed her hard-won freedom after centuries of foreign rule. We would certainly have been in a much better position to face the present disaster if warning of the coming events could have been duly picked up from the general famine in 1900 and more particularly from Bengal famine in 1943. We are now paying heavily for the neglect. The free India has to emerge successfully through the various ordeals in her early periods of independence and the problem of meeting the shortage of food by greater production would ere long, be solved if we but rightly organize and operate the food production front. It provides a sad tale however that we have so far not been able to see definite plan or policy or any organized efforts to meet the unenviable situation which is so serious as to threaten the very existence of the nation. The much talked of grow more food campaign

of putting the 'Food Campaign' on a war basis. Evidently, Government would be justified to raise public loans for food production drive the same way as they did for financing war. In such an emergency as this, economic cuts and retrenchment in the Agriculture and Food Departments of which we hear so much these days is something unthinkable and wholly beside the point.

Food Commissioners

As part of implementing the recommendations of Lord Boyed-Orr, the Centre has already appointed a Food Commissioner and constituted a Food Production Board composed of technicians and officials at the Centre. The Provinces and State Unions have also been instructed to make similar appointments for their respective areas.

Obviously, much of the success of the Food Campaign depends on proper selection of personnel for these key posts. These Food Commisioners must be men of outstanding capacity and wide experience, possessing large fund of originality and initiative and that rare gift which we call 'Drive'. Success in creative and constructive work largely depends on these rare qualities of workers at the top. If nation-building work could not get a fair start in this country, it is solely due to the absence of right type of human material equipped with creative faculties to take to it. For very same reasons if Food Production programme has not been a success in the past, it is due to dearth of getting just the right type of men to the job.

Proper selection of men to be able to give vigorous drive to the Campaign of food production is, therefore, the most essential condition to be satisfied by those charged with the responsibility of making these selections. Failure in this respect cannot be compensated either by large finances or other resources made available. Since, human factor is at a discount these days, we especially draw the attention of the authorities to exercise the greatest amount of discretion in making these appointments.

Perfect Coordination and Cooperation

This business of coordination and cooperation between the Centre and the Provinces and between several departments in the same Province or area has been another great headache of the administrators. Notwithstanding earnest wishes of men at the top, it has never worked satisfactorily so far. The nation-building programmes of Rural Reconstruction and Food Production have been greatly handicapped due to absence of spirit of cooperation between officials of various Government departments. Red-tapism and rigid departmental outlook created in the bureaucratic machinery prove the greatest stumbling block in the way of purposeful cooperation in the sphere of nation-building. It has been an impregnable wall to break through. The only solution as far as we can see is that all departments connected with food production both at the Centre and in the Provinces and the State Unions should be placed under the Food Commissioners and they must be given full powers in matters of appointments, promotion, transfer and dismissal of officials and the staff working under these departments.

We must own and admit that our people including the Government officials in general lack that spirit of coordination and cooperation which make for success

in cooperative enterprise in some of the advanced countries of the west. Our people would only obey and submit to the authority under official compulsion and that too when they know that failure to do that is fraught with serious consequences to their interest.

Reaching Down To The Farmer In The Field

The last one of these recommendations demands establishment of a living and effective link between the Government machinery and the farmer working in the field. This one is the most difficult recommendation to be implemented. We may safely call it Agricultural Extension or Food Production Service. The villager or worker in the field has all along remained untouched by progressive and uplifting influences of our nation-building services in the past and this more than anything else contributed to the failure of most of our national undertakings. Our organisational link with the villager has been the weakest if it has been there at all. The time has come that this organisational weakness in the national structure must be removed at all costs.

Since every farmer and his field has to be linked with the 'Food Production Drive' as already contemplated by the Government, it naturally follows setting up of an extensive machinery to handle the job. It can be on the lines of Revenue Accountant or Patwari appointed to maintain records of revenue assessment for every group of 3 or 4 villages. If Food Production Drive is to be based on the sound footing, and not on a haphazard, unplanned and unsystematic way as has been the case hitherto, the Government should think in terms of setting up a huge machinery all over the country. Each food worker should be placed in the charge of 3 to 5 villages and his duty should be to maximise production from the lands under cultivation as also to bring new lands under the plough if there be any. He should be held responsible to fulfil the target of production of food fixed for the area placed under his charge. That way alone lies creation of living contact with every farmer and field in the country's programme of food production. And this being done, we have no doubt, it is bound to produce sure results.

The Government determined to achieve tangible results within specified time would not grudge the cost involved.

NOTE

THE GOVERNOR GENERAL'S BROADCAST ON FOOD PRODUCTION

In the last issue of this Journal, we had published the Prime Minister's Radio-talk to the nation to intensify food production. We have here another appeal broadcasted by the Governor General, Shri Rajaji, which claims thoughtful consideration from every citizen of India, who is called upon to do his duty at this critical juncture in the life of his country.

" We have to produce all the food we require or we invite famine and chaos which will reduce our population. Nature is a relentless accountant and works automatically. Do we as a nation wish to live and make our mark as an independ-

which has cost us crores of rupees, has resulted in creating more files than food. And surprisingly enough we have yet not decided on a better programme as a part of the well devised and practical plan to step up appreciably the food production.

India is spending some 25 crores of rupees as subsidies on the cost of food grains imported from foreign countries for a deficit which is not more than 10% of its present food production. Without anymore indulging in airy schemes and high sounding talks, the Government should immediately concentrate its attention on the short term schemes which may safely insure atleast 15–20% more food production in 3 years time. This may be possible by introduction of improved varieties of seed, urban and rural compost making, use of improved implements, introduction of better cultural practices, plant protection against pests and diseases, increasing irrigational water as from existing and new wells and small tanks, adoption of contour cultivation, and strip cropping methods. Each of the above items may if well tackled, be sufficient to meet the entire shortage to-day. The ultimate results be well judged if all of them find their due place in the practical short term plans. These are not unknown to the Government or the people but what is wanting is a well co-ordinated and cohesive plan providing for the greatest co-operation from the people and particularly from the tillers of the land who unfortunately have been yet out of the picture. These short term schemes may not again demand huge finances.

Then there would be long term plans on the utilization of waste lands for agriculture or forestry, large irrigation projects, extensive soil conservation service, complete transport and marketing facilities, consolidation of holdings and reforms in land tenure and modes of farming.

India has great potentialities of development with vast unexplored natural resources and huge human force which all if diverted to organized efforts, may not only feed its papulation well but once again turn it into a food exporting country.



NATURE'S GIFT

RURAL INDIA

Vol. XII, No. 7] AUGUST, 1949 [Whole No. 125

"Salvation of India lies in Cottages."

—*Mahatma Gandhi*

THE TASK BEFORE THE FOOD COMMISSIONER

INDIA'S Prime Minister, Pandit Nehru inaugurated the 'Food Production Drive' in the country with a talk from the All-India Radio Station, Delhi, on the 29th June last and announced the appointment of a Food Commissioner at the Centre and similar appointments in Provinces and State Unions. This appointment of Food Commissioner has been made in pursuance of the recommendations of Lord Boyed-Orr, who was invited by the Government of India to advise them to make up the food shortage of the country by the end of the year 1951. Lord Boyed-Orr's recommendations as announced on the radio in purport are:–

"First, that we must treat this as if it was a national war emergency and have machinery which can function swiftly and efficiently without the normal delays of the Government apparatus. Therefore, he suggested that there should be a Food Controller or a Director of Food Production at the Centre with large powers, and similar Controllers of Food Production in each Province and State.

"Second, that there must be perfect coordination and cooperation between the Centre and Provinces and States.

"Third, that we must reach down to the farmer in the field. That is, there must be links from the top policy-making place to the farmers who have ultimately to carry out that policy. The farmer must understand and cooperate. The understanding and cooperation of the farmers was most important."

War Emergency And Its Implications

[redacted] seemingly baffling Food problem [redacted] defied solutions all these six years and more of 'Grow More Food Campaign' is only possible of solution if it is treated on the basis of war emergency as advised by Lord Boyed-Orr. This realisation together with its implications should naturally dawn on the Government and they must adopt adequate measures to tackle the problem on a war basis. Public cooperation including the cooperation of the tillers of the soil would naturally follow as a matter of course in proportion to the volume, intensity and vigour put in by the Government machinery in the contemplated Food Drive. If public cooperation has not been much in evidence so far, it is basically due to the absence of strong initiative on the part of the Government.

Though, India was not directly involved in the last World War, it had a standing army of 2 million combatants and the expenditure on the army mounted to the peak of several hundred crores. If every farmer and field must be reached in this vast country through the machinery created for food production, the Government, of course, must prepare themselves to spend at least as much money and engage as large a number of officials and workers to fight on the 'Food' front as they did during the last war. The Government should satisfy these two primary conditions in order to let the people feel that they have realised the full implications

ly nourished, 41% was poorly nourished while one out of every five of our people was very badly nourished. There is no reason to believe that the position since then has improved. The fact is that food production has lagged far behind the increase of population. The area sown per head of the population has declined from 0.90 acres in 1911 to 0.72 acres in 1941 while the population has increased from about 33 to 40 crores within the period 1931 to 1941. Coupled with this is the qualitative aspect. Food is not only inadequate in quantity but also inferior in quality. It possesses little nutritive value. Various economic inquiries have shown that the caloric value of the food mostly consumed by our labourers in industrial areas hardly reaches 2200 while it ought to be not less than 3000. This is a serious deficit. Had the nutritive value of our food been quite all right a lesser quantity of it would have sufficed.

There are several causes which have contributed towards the gravity of our food problem. These causes fall into four categories, namely, causes operating from the supply side, causes operating from the demand side, causes created by Government policy and general causes.

***Supply side*:**

Indian agriculture has been called a gamble in rains. The rainfall is very unevenly distributed. While it rains more than 450 inches in Cherrapunji, Sindh gets only 3 inches of rainfall in a year. This precarious nature of rainfall has made our agriculture a hazardous occupation. It has reduced the stability of production and has often been a fruitful source of famine. It has been correctly observed that India has a cycle of five years in which one year is good, one is bad and three are indifferent. In addition to this the fertility of Indian soil also varies from place to place. This has resulted in an uneven distribution of food production and consequent scarcity of food.

Another cause as I have already mentioned, is the increasing diminution of the area sown per head.

The onset of war provided an incentive to greater production. Industrial progress received a great impetus and attracted a large labour force, particularly from villages. The migration of village people to the towns contracted the supply of man-power in agriculture. As our agriculture has not been mechanised the thinning away of the great labour force brought many evil consequences in its train. The wages shot up to abnormal height and the producers thought it unprofitable to carry on agricultural production, especially that of food products. The reason was obvious for the rise in wages far out-distanced the increase in the price of food products. It was only later on that Government action in guaranteeing the prices of food grains and controlling the market could bring a little of confidence to the peasants. But that too was not very successful.

Again India has always been a normal deficit area. It has been estimated that we have an annual deficit of about 5 million tons of foodgrains which can be made good only by imports from abroad. During the war it was hoped that in the post-war period considerable imports would flow in as a result of greater shipping facilities. But unfortunately it belied our hopes owing to three reasons. Firstly the war shattered and dislocated resources and economic activity of many a nation in Europe and the food

situation became serious not only in India but there as well. Secondly, though the supply of food stuffs was more or less inelastic the inflationary wave which is generally a child of the aftermath of war, increased the effective demand for food stuffs and thus reduced the quota which other countries could dispose of to India.

The continuance of war for two or three years convinced our businessmen of the fact that it would go on for some more years to come, and it actually did. This was an enough indication to them to hoard foodgrains and make money. While there was sufficient of foodgrains in the country, an artificial scarcity was deliberately created by hoarding millions of tons of foodgrains and selling them in black-market.

Inflationary tendencies during the war resulted in a greater demand for commodities and this pushed up the prices. As agricultural output is almost inelastic and as there was already a chronic shortage of food products rise in prices was prominent in this particular field. During the years 1945-48 the wholesale prices of agricultural commodities recorded a continuous and alarming rise as will be clear from the following figures:-

Economic adviser's Index No. of Wholesale Prices of Agricultural Commodities:

(Base year August 1939 = 100)

Month	Year	Index Number
August	1945	268
August	1946	304
August	1947	352
August	1948	444

The situation has gone from bad to worse during recent times. The prices have gone up much more in proportion than the increase in the volume of money in circulation. That the tendency is conspicuous enough is clear from the fact that even during the four months, March 1948 to July 1948, while the volume of currency in circulation could increase only by 2.7% the rise in the general index of wholesale prices was as much as 11.5% (taking August 1939 as base). It was hoped that an increase in the prices of food products would give an incentive to more production but unfortunately the result has been contrary to our hopes. Since the fixed costs (like land revenue, rent etc.) were not much affected by a rise in prices they could be met with by selling a smaller amount of produce. Whatever remained of an additional income was utilised in the repayment of old debts. As there was an acute scarcity of consumption goods the farmers kept the remainder of foodgrains with themselves to improve their own diet.

***Demand side*:**

On the side of demand one of the most important causes was an increase in population. Though there might have been no reduction in the total output of foodgrains yet as the number of consumers increased the average share per capita was reduced. The total pupulation in the Indan Union was about 298 millions in 1941 and according to a statement made by Sardar Patel last year in the Constituent Assembly it has increased to 337 millions. Thus at present our problem is not to produce better food but more food.

The prevailing war-conditions and scarcity of many consumption goods induced people to buy more of a thing than they actually needed. As black marketing and high prices were assuming serious proportions people were struck with a sense of economic insecurity which prevails even at present. Consequently there was move for buying irrespective of high prices; for the income of the people too had increased. Those who belonged to high or middle class status could afford to buy more than their needs and secure themselves against the furture. But the poor were hit hard for they could not afford to do so. This resulted in a very unequal distribution of

ent and civilized people ? I suppose, we do. Well then, we must sit up and think this food shortage out and do what logically follows. Otherwise we break.

"India had to pay for what she imported from other countries by producing goods herself and exporting them in payment of her dues for imports. We are importing at present a great quantity of manufactured articles from abroad as well as considerable quantity of foodgrains. For payment we have been depending on our wartime savings banked in England in stead of producing extra goods for export. This is good enough for the time being.

"But this cannot go on for ever, can it ? We must stop importing to the extent we cannot export. If we do not ourselves stop, it will stop of itself. We must cut our imports down according to what we can now export, and wait for improvement in the latter before we order things from abroad. But whatever we may or may not do, we must eat. Any thing may wait, but not this."

Problem Of Payments

"Government programme to build new dams and reservoirs to bring in new areas under cultivation depends on help from abroad in various ways. This again brings us up against problems of foreign exchange, that is, the problem of payment in goods for the expensive machinery and services that we have to import from abroad. Government try to get these things on credit and are doing their best.

"These and other large problems are being tackled by our Government who are doing the utmost they can. Foreign governments also have not been ungenerous or unhelpful. They are indeed doing all they can to help because they know India is a great country with plenty of natural resources as well as a very brainy industrious population, and so India is sure one day to be a great and valuable unit in the civilised world. Our brains and working capacity, which together form the principal elment in wealth, are quite good in quantity and quality. Every one in the world admits this. We cannot, however, fulfil these high expectations unless we, in the meanwhile, produce enough food to live and work efficiently. Even if we are unable to do much atonce in the way of producing manufactured articles in surplus for export, we ought to grow all the food we require.

"We are a rice-eating people. We also consume a large quantity of wheat. We cannot easily and at once expand the area under rice cultivation. The shortage in one kind of food can be made up by another if we know how to adjust ourselves. We cannot afford to sit still until irrigation schemes for increased rice cultivation are completed. We must grow such things as can be immediately grown by way of food, whatever they may be. We can produce more millet and pulses and tubers than we do now. We must raise poultry for eggs and grow fish in our ponds and fruit and vegetables in our house yards and make up for shortage in calories."

Changeover In Habits

"The standard of life among the working classes has gone up. It must go up and it is well that it has gone up. The peasants and landless rural labourers who used to eat ragi, maize or millets, and ate rice only on festive and rare occasions, now eat rice generally and are not happy unless they get it. Besides the changeover in habit, population has increased. There is thus on the whole a great increase in consumption of rice. This is as it should be. But it is not altogether good. In the first place a pure rice diet is not so good for health as it may be for taste. But apart from this we have as a result gone short of rice. We cannot easily expand the area of rice cultivation, for it requires dams and canals which involve vast expenditure and cannot be got ready quickly. We can, however, raise more millet and pulses and tubers without large irrigation projects.

"It is therefore, desirable that the fashion must be set for greater consumption of ragi, cholam, maize and millet. Nothing can be done by way of setting a fashion except by the socalled upper classes. What they do is eagerly copied by others. Like jailgoing, hobnobbing with out-castes, spinning, wearing Gandhi-caps, millet food must be made patriotic high class fashion. This will lighten the present load on rice."

Manuring

"Urban authorities should consider it their sacred obligation to collect and conserve town refuse and make good manure out of it and place it at the disposal of gardeners and cultivators of land at a reasonable price. People gather more and more into urban areas and it is the duty of the civic authorities to remember their obligations to the rural areas that feed the towns and return at least in part the nitrogen that flows into the urban areas. This can be done by careful conservation and disposal of the organic refuse of the towns. Apart from animal droppings, what is thrown out by townsfolk is a continuous and considerable drain on the rural areas, unless there is an organised movement of manure from towns to villages.

"What is required is increased interest in raising something by way of food wherever you can and whatever it may be. Now, who is to go round and tell people all this and not only tell, but make people do it? Who did it for weaving and spinning? Who did it for Hindu-Muslim unity? Who did it for removing untouchability ? Who did it for fighting the drink-evil? Not Government anyway.

"The people organized themselves under Congress direction. Government did not, and would not do it in the days that are past. Now, however, Government are not against the people. They are with the people. But Government cannot do some things. They cannot do what individuals and organised groups of individuals can alone do. Officials cannot effectively spread themselves over the vast country and even if they could, it would cost so much that it is impossible. An unofficial nation-wide movement alone can do it. Government will help, but self-help and patriotism produce more than official patronage or interferernce."

FACTORS THAT CREATED OUR FOOD PROBLEM

By : J. S. Chaube

THE food crisis in India today is about six years old. Even before these six years India had a food problem since according to the estimates of persons like Dr. R. K. Mukerjee and Dr. Gyan Chand, India has long been a normal deficit area with regard to both the absolute qualitative need and the nutritional requirements of the people. But since 1942 the normal food problem assumed the form of crisis. Various causes led to famine conditions in Bengal, Bihar, Tamilnad, Madras and the Malabar. It was hoped that the termination of the war would coincide with the end of our food problem. Unfortunately, however, the food situation went from bad to worse during the post-war period. Although the Indian agricultural statistics are known to be inadequate and defective, the conclusion seems to be warranted that our food situation has been deteriorating.

The food crisis in India presents itself into two aspects, namely, quantitative and qualitative. It was estimated by Sir John Megaw in 1933 that only 39% of the population of British India was adequate-

food among various classes of society. As India is mostly a poor country a large proportion of her population came under the obvious grip of starvation and under-nourishment. Our Government felt compelled to control the prices and devise the method of rationing to do away with inequality of distribution and a sense of economic insecurity. As the income of the people has increased there is definitely a greater consumption of food per head; for high incomes in a relatively poor country are often apt to be spent in that direction.

The greatest immigration of human beings ever witnessed in the history of the world was that consequent on the partition of our motherland. Millions of people crossed the newly created frontier between India and Pakistan. These refugees shook the tottering debris of our food economy to its very foundations and the problem became more serious than ever before.

Government Policy:

There are a few causes which are consequent on our Government's policy. One of the recommendations of the Foodgrains Policy Committee was that the Government should arrange for an efficient procurement of foodgrains from rural areas in order to make the scheme of Controls and Rationing a success. But the cultivators never cooperated whole-heartedly with the Government. The reason for it was obvious. The Foodgrains Policy Committee had recommended that the "introduction of compulsory element (in regular requisitioning) makes it most desirable that the price offered should be reasonable in itself and appear reasonable to the cultivator." The cultivator could not be expected to increase production if the increased production was to reduce the money-value of his products. The prices were arbitrarily fixed at a rigid figure. The villagers thought that they were robbed of their produce and so either they reduced production or began to raise commercial crops or sell their foodgrains in black market.

On account of this reason and many others and under a false sense of security and with an idea of making an experiment the Government resorted to the policy of decontrol. Once more the evils that gave birth to Controls and Rationing became prominent. Control, decontrol and control convinced the public, specially the businessmen, of the failure of Government policy. This has shaken the confidence of the public and has encouraged the profiteers. Our problem has become more serious and appears to assume a permanent character.

It has often been stated that transport bottleneck is one of the main factors that has aggravated our food problem. During the war the Government gave priority to the traffic which was necessary for implementing it. Even during the days of Rationing transpot became a difficulty. There are instances when foodgains from surplus areas could be transported to the deficit areas only after a long period. The Bengal Famine would never have been so serious had the speedy transport facilities been available. The uneven distribution of food scarcity coupled with the transport bottleneck contributed to worsen the food situation.

General:

Last but not the least is the general cause, and to this category I assign the effect of partition. Figures for the 1945-46 show that Pakistan is in a relatively better position than India in respect of the production of foodgrains. In that year the production of rice in the Indian Union including Hyderabad was 18.5 million tons while in Pakistan it was 8.2 million tons. Thus Pakistan has 30.7% of the total production of rice. In the same way it has 34.4% of the total production of wheat produced in both the countries. The share of Pakistan in the total population of undivided India is only 19.5% but its share in the total food production is more than proportionate. India is therefore in a vulnerable position for partition has reacted unfavourably on our country.

AGRICULTURE & SCIENCE*

By: Rao Saheb H. M. Desai

Introduction

(1) Of the many varied needs of a human being, the most important and indispensable ones are, food, clothing and shelter. These are absolutely necessary for a human being to exist, and of these three again, food is of prime importance. Of these three vital necessities, agriculture supplies food and clothing wholly and to a lesser extent shelter. In my talk to you this evening, I will point out to you what science has to offer and what you as a Scientist can do to improve our agriculture, and especially that aspect of agriculture in which every-body in India to-day is most vitally interested i.e. food.

Agriculture & Its Importance

(2) India is an agricultural country which means a majority of its population is engaged in the business of agriculture, may be production, distribution and commerce or processing of agricultural produce. Out of the total population, about 75 to 80% depend upon agriculture, among these there are innumerable small producers, who work throughout the year on land and yet cannot produce sufficient for themselves. Also among these, there are again a good few, who do not labour themselve but live on the labours of others.

(3) If you examine the figures of the total production of the country, you will find that agriculture contributes a major share in this national income. If you again study the export trade of India, you will find it mainly made up of the raw materials produced by the agriculturist.

The Present Position of Agriculture

(4) You will thus see that India is an agricultural country, engaged in and mainly dependent on agriculture. Let us now see what is the present position of our agriculture and how it affects us.

(5) Out of every 100 acres of land cultivated nearly 80% is devoted to the growing of food crops. Of a 100 persons engaged in agriculture about 75 to 80% are engaged in growing food for us all. This means that for producing food for every 10 persons in our country about 8 persons are engaged. For comparison I will give only one instance. In U. S. A. some 30 years back, 6 to 7 persons were engaged to grow food for 10 persons. To-day that work of 7 men is done by only 2 men i. e. for producing food for 10 persons now only 2 men are necessary. This is due to mechanisation of agriculture. Persons thus relieved from agriculture found employment in industries. This means U. S. A. within the last 30 years, turned from an agricultural to an industrial country.

India is destined to remain an agricultural country at least for some decades to come for want of rapid increase of her industries. Whether India should be fully industrialised or her industries should be centred round agriculture is a separate question and I would not like to enter into this discussion in my to-day's talk.

(6) Thus the bulk of our land and labour is devoted to the growing of food crops for our country, I would like to point out to you the position regarding our food supply to-day.

* Address delivered by Rao Saheb Desai to the Science Association, Karnatak College, Dharwar.

(7) Out of the total cultivated area of 360 million acres in India, 288 million acres are devoted to the growing of food and fodder crops. Our total production of food crops is estimated at about 61 million tons in a fairly good year. Allowing about 12½% for seed and wastage, this leaves us about 53.4 million tons for consumption. Our total population is 400 million souls equivalent to an adult male population of roughly 300 million and for that population, we are producing 53.4 million tons of food crops. In an average year we produce much less than this figure.

(8) According to the figures available for the pre-war period, India was importing about 40 to 50 lac tons of food crops per year mostly rice and only to a certain extent wheat. She was also exporting some quantity of food crops and these small imports and exports used to cancel each other. Taking India as a whole, she was deficit in her food production and out of every three pesons one used to go to bed without full meals, i. e. partially fed or hungry.

(9) Taking the example of the Bombay Province, we devote 20 million acres of area for the production of food crops (cereals & pulses) and produce about 3½ million tons of these (food crops) in a normal year. Allowing about 12½% for seed and wastage, for the 21 million of our total population equivalent to about 16 million adult population, we produce about 3 million tons of food crops in a year of good seasons and import about 4 to 5 lacs of tons of food material from other parts of India or Burma especially rice, wheat, sugar, and to a limited extent millets like jowar and bajra. On the whole Bombay is a deficit Province.

(10) In a good year in pre-war days, we used to get the following total quota of food as compared to what we should get according to the standard laid down by the scientists for full development and growth:—

	Million tons	
	I (Production)	*II (Requirement)*
Cereals	53.5	63.5
Pulses	7.5	9.3
Vegetables	19.7	30.0
Milk	18.8	66.6

If this is reduced to a daily ration quota that we need for maintaining normal health and growth and the quotas that we actually get, the comparison will be interesting :—

	I *Normal ration* (Requirement)	II *Ration now available*
Cereals	20 Ozs.	13 Ozs.
Pulses	3 ,,	
Vegetables	12 ,,	
Fruits	2 ,,	Not rationed, but difficult for an ordinary man to obtain in full.
Milk	8 ,,	
Sugar	2 ,,	3/4 Ozs.

(11) Please see for yourselves as to how one can exist on such a petty ration and that too of an unsuitable type and a bad quality. I would not like to go into the question of calory requirements of food as this is helpful only when we have ample supply of various types of food to choose from in order to make up the required quantity of calories. I only want to emphasise here that though we are an agricultural country, we are not producing sufficient food even in a good year for our bare maintenance. It has been pointed out by eminent authorities

in the past that in a fairly good year India produces food for only 70% of her population. This was doubted by many who were not in touch with agriculture. In the years during the war and after, it has been driven home to everybody in India, that we are not self-sufficient in our food production and that we are at the mercy of other countries for making up the deficit and have to go from door to door with a begging bowl in our hand only to be insulted - not a happy position for a selfrespecting nation!

Why Is This?

(12) The question may naturally arise, as to why this position of production inspite of vast resources of land and labour at our disposal. The only answer that suggests itself to me is that India is an agricultural country with too much of pressure of population on land. Lands are poor, the tillers of land are poor or seasons are uncertain and therefore the resulting production is very low.

(13) To illustrate, take the average yields in pounds per acre of wheat and rice in India and compare them with those from other countries :—

	Wheat	*Rice*
India	800	800
U.S.A.	—	1450
Germany	2200	—
Japan	—	2300
Italy	1350	3000
Egypt	—	2000
China	—	1400

This will convince you that our per acre production is very low as compared to that of the other countries. The question naturally arises as to why our production is low in comparison with that of other countries, and, whether or not this can be increased to the level of countries, where this is high. I might say without hesitation, yes, this is possible, if we employ means that other countries employ i. e. *the application of science to our agricultural production.*

To feed our population with sufficient and nutritious food according to the standards laid down by experts, we have to increase the production of cereals by about 20%, of pulses by 25%, of vegetables and fruits by 100% and milk and milk products by 250%.

Application Of Science To Agriculture

(14) In order to so increase the yields of our food crops, we have to lift our agriculture from the traditional methods of production and, apply scientific methods, worked out on the experimental farms and tested on farmers' fields and found profitable. We have also to devise means to reduce the dependence of agricultural production on clemencies of weather and save it from the ravages of pests and diseases both in the fields and in storage.

All this can be done by the application of science to Agriculture and the scientific knowledge we have gained so far, if applied on the country-wide scale, the production of food crops can be increased by about 25% at least over-night. What these improved methods are, I will discuss in brief.

(15) These methods can be conveniently divided into (i) the technical and (ii) the social. I will discuss technical first.

(16) The most important factor that controls plant growth under our conditions is water. 96% of our agriculture depends upon rain which is both uncertain and ill

distributed, and that is why we experience famine with the failure of rains. If the rain water is well conserved in soils we can secure some crops even in bad years. The Agriculture Department has evolved what is known as the "Dry Farming Methods" for the scarcity areas. These methods wherever applied enable cultivators to secure better crops in an average year and also some returns even in a scarcity year, where an ordinary farmer has no crop to harvest.

(17) Scientists have also evolved new crops for such scarcity areas which are either early varieties or use water for growth more economically, and are known as drought resistant crops. Varieties of jowar have been evolved for desert conditions in U.S.A. These varieties have very stunted growth, long ear heads, early maturity and fairly good yields. Efforts to evolve suitable strains of jowar and bajara, for the scarcity tracts of our Province, are in progress.

(18) Another way by which this deficiency of water can be made up is by irrigation. Irrigated crops if well managed usually yield twice or three times in comparison to rain-fed crops but the expansion of this source of water supply is very costly and hence of limited applicability. If irrigation is mis-used, it spoils the soil beyond repairs. There is great scope for increasing irrigation under well and tank, but before exploiting the possibility of increasing irrigation by well thorough survey of sub-soil water recources is necessary in order to avoid waste of money on sinking wells at places, where there is no water or water is of bad quality. In any case, with expansion of irrigated farming, scientific management of soils would be necessary and will be required to be provided for. Research stations in the canal tracts have evolved methods of soil management the application of which helps farmer to obtain better yields without deteriorating soils.

(19) Our soil is at the lowest ebb of fertility, and with little addition of manure better results are always associated. Our land is hungry and food that the soil needs is mercilessly wasted by us. If all the organic matter which is wasted now is fully utilised to fertilise the soil, the yield of crops would increase beyond recognition. Our Chinese brothers are doing this successfully from the ages past and it is not understood why we cannot do this. Organic matter which for the present goes to waste can be turned into first class manure by composting and can be used to feed crops. Science has made this possible and it is upto the farmers to adopt this in practice wholesale with the help of the Agricultural Department.

(20) Improving the seed and using it for growing of crops, is another way of increasing the production in agriculture. Many advanced countries have evolved new varieties of crops better in quality and yield and resistant to climate and pest or disease attack. Application of breeding methods to improve cultivator's crops has revolutionised agriculture and where some of the crops were not growing before, evolving of suitable new varieties have now made it possible for these crops to grow. We in this Province are doing our little bit and have achieved considerable success in evolving better varieties of rice, wheat, jowar, bajara, cotton, groundnut, cane etc., which are now grown on extensive scale by farmers of this Province.

(21) Insects and diseases take a very heavy toll of our agricultural produce, both in the fields and go-downs. Various measures have been worked out, the use of which minimises the loss due to this source. To quote only one or two instances, smut disease on jowar can be controlled completely by treating seeds of jowar with sulphur before sowing these. Cost is negligible, but effect is marvellous. Cotton crop in some of the tracts suffers considerably from the disease known as wilt. If you tour round Gujarat, Khandesh or Kannada cotton tract, you will find fields after fields of the cotton crop affected by this disease. Department has evolved seeds resistant to this disease, which are now sown by the cultivators on a large scale to save their crop from the ravages of this disease.

(22) Such instances of the evolution of suitable seeds, methods and practices in agriculture that have been devised by the aid of science can be multiplied with innumerable instances. By quoting only a few instances, I wanted to point out to you what application of science to agriculture can do. Other advanced countries have fully harnessed the results of scientific researches to agriculture and are reaping bountiful harvests.

(23) In short, to improve our agriculture and to take it to a level of the other advanced countries, we will require an army of scientists trained in various phases of agriculture, such as agricultural chemist to work in the field of soil, plant and food nutrition; agricultural botanist physiologist and plant breeder to improve the race of our cultivated crops; agricultural entomologist and pathologist to control the ravages of pests and diseases both in the fields and store houses; cattle experts and dairy technicians to improve our cattle population and the milk supply both in quantity and quality; agronomists to test the results of technicians on the farms and make them acceptable to farmers; scientist farmers to settle on farms and to take leadership of rural areas etc. ect.

Social Disability

(24) To apply the result of researches successfully in the field of agricultural production requires suitable social back-ground. We have great social disability in agriculture, which necessitates division of land into small parcels and situated far apart from one another to make them remunerative to work upon, which also makes adoption of scientific methods of agriculture difficult if not impossible. Unless each farmer is given an economic unit to cultivate, his labour and time are wasted and his production always remains at the lowest level. No amount of application of science to agriculture can bring any visible results, unless a cultivator is self-sufficient and happy. To achieve this the present social structure shall have to be suitably modified, and to do this, without any injustice to any body and without any social upheaval, is the field for social scientist to explore and work.

Scientists Wanted

(25) From the discussion above, you will realise that for the successful application of science to agriculture we want social scientists, technicians and educated intelligent and progressive farmers. From where are these going to come? In free and independent India, if you want progress and prosperity, the present generation of students shall have to

the higher ideal..... when they are stilled it is death we live in."

Agriculture is the noblest of all professions, for here a person can maintain highest standards of integrity and honesty. But we the urbanites, the so-called civilized, call the agriculturist rustic and uncivilized, and his profession a debased and mean one. He is accorded no social status, as if he is merely meant to minister to the needs of the city dwellers. Surprisingly however, we forget that civilization is not related to grade or profession, but refers to the state of mind. We confuse it with a crazy thirst for new things and a mad race for wealth.

So, we will have to give to our agriculturist his proper place, which is his rightful due but which we forget in our zeal to reform the agriculture by relying exclusively upon the material means of production, and throwing into background a living factor who thinks and feels, has hopes and desires. He is the backbone of the country. He represents what India actually is and any attempt to disregard him in any scheme of agricultural planning would be suicidal. The ideal for the agriculturist should be to resolve to seek "not greater wealth, but simpler pleasure; not higher fortune, but deeper felicity making first of possessions, self-possession and honouring themselves in the harmless pride and calm pursuit of peace." (Ruskin)

AGRARIAN REFORMS IN INDIA

By: D. Krishna Iyengar

THE subject of Agrarian Reforms is one of vital significance to-day, because almost all the provinces in India are anxious to provide an incentive to the cultivator to enable him to raise the production to the maximum level, by giving him security of tenure, granting him more rights in the land, improving his financial position and helping him in several other ways to conduct his business efficiently. Most of the provincial Governments have decided to abolish the existing land system and are taking measures towards that, but no Government has yet outlined any comprehensive agrarian policy which they intend to pursue.

Madras—

Madras has launched the Bill of Abolition of Zamindaris. There is a lot of difference between the Zamindars in Madras and Zamindars in Bengal. In Madras some were born Zamindars, some acquired Zamindaris and some had zamins thrust on them, and hence the incidence of abolition is not equally felt by all. Prakasam Committee Report reveals that the rents paid were too heavy compared to the figures of the nighbouring Province, and the loss of contact between the Government and the Zamindari ryot acted as a brake on agricultural improvement. To put an end to this sorry state of affairs and bring the ryot into direct contact with the Government and to render revenue administration uniform throughout the Province, the Government have passed the Bill for the Repeal of the Permanent Settlement and conversion into Ryotwari Settlement.

To prepare the ground for such an enactment, the Government had already passed several acts such as Act for the Prevention of Eviction of Tenants and Stay of Proceedings, Act for the Preservation of Private Forests, Act to Prohibit the Alienation of Communal Lands, Forests, etc., Act for the Reduction of Rents in Estates. The new Bill provides for the acquisition of whole Inam villages, on payment of compensation as in the case of Zamindars. The Government will appoint a Commissioner to give effect to the provisions of the Act and to superintend the taking over the Estates and make due arrangements for carrying on their interior administration. This agrarian legislation is provided in Madras purely at the instance of the Congress High Command.

Bombay—

There are two important measures in recent agrarian reforms in Bombay, one amending the Tenancy Act of 1939 and the other for Prevention of Fragmentation of Agricultural Holdings and for their Consolidation. The Reforms in Bombay aptly recall the famous Four 'Fs' of the Gladstonian remedies suggested to Ireland and they are Fixity of tenure, Fairness of rents, Fair compensation and Freedom of transfer. The new law provides measures for determining the rent. The tenant is guaranteed Fixity of tenure. The Bombay Act empowers the Government to specify for each locality (a village, a Mahal, or a Taluk) a standard area as the minimum necessary for profitable cultivation as a separate plot. It also prohibits the transfer of fragments of smaller than the standard area except to holders of contiguous plots and prevents partitioning of estates. No Act prescribes that on the death of a farmer his land should not be subdivided below a certain limit and if there are more claimants to one standard unit, it should be owned by one and others be compensated in cash, thus, contemplating the law of Primogeniture of England.

Bengal—

The land problems here have assumed a very perplexing character and the Congress Government of West Bengal is trying to solve these baffling problems. They have proposed a scheme of land reforms to eliminate all unproductive population who subsist on rental profits from land, to provide each cultivating family with an economic holding which shall be a compact, indivisible and nontransferable farming unit, to prevent transfer of agricultural lands to any person other than a bonafide cultivator, to relieve pressure of population on agricultural lands, to encourage adoption of cooperative methods of cultivation and also to create facilities particularly for the displaced landlords to invest their compensation on large-scale cooperative farming.

The two important aspects of the scheme are, firstly that all the elements of proprietary rights should merge together in the village community, and secondly, each village should form a cooperative society for joint management of cultivation. These reforms, when executed, would bring about a radical change in the existing land system of West Bengal and would certainly destroy the most arbitrary and oppressive socio-economic system in India.

U. P.—

The Tenancy Act of 1939. not only consolidated the tenancy legislation but conferred great security of tenure. To give relief to ejected tenants, and to provide for better utilization of land, the U. P.

supply these scientists and such farmers. Farming has been neglected in the past. The best of the rural population has taken up vocations other than agriculture. There may have been and were reasons for all these in the past. These will not do now. For some years to come, all of our educated men shall have to contribute activity one way or the other in lifting agriculture from its lowest depth of decadence. To settle on the land and be satisfied with a lower standard of living or to work as an agricultural scientist at a lower remuneration than you can get in other walk of life may mean a sacrifice. But this is the lowest price you have to pay if you want your country to progress. If you contribute your mite towards this end i. e. to improve the agriculture of your country, your sacrifice would not go in vain. You will earn the gratitude of generations to come if you will help to build up a happy and prosperous free India well fed and well clothed.

(26) Lastly I will request you all to think over and see how you can be of service to rural India. To those who have scientific talents I would request to join the College of Agriculture, even after your graduation from the College of Science and equip yourselves fully to serve rural India as Scientists, may be social or technical. To those who have qualities to become farmers, the Agricultural College will afford training to become successful farmers and rural leaders, whom rural India wants not merely in hundreds and thousands, but in tens of thousands. Unless educated men with zeal to serve rural India settle on land, the development of agriculture cannot make and will not make any substantial progress for decades to come. It is upto you as intelligent India to speed up the rate of the development of agriculture, so that within as short a time as possible, every Indian gets two square meals a day, ample and nutritious. This is the meaning of free and independent India and that is what we have to achieve if we want to be respected as free Indians in the comity of nations of the world and not go to their assemblies with a beggar's bowl, but as a generous donor of food.

RE-ORIENTATION OF AGRICULTURAL POLICY

By: S. V. Agarwala

IN all our discussions of agricultural planning we notice a flagrant disregard of the agriculturist himself. Though all the measures of agricultural improvement will no doubt cluster round him, yet his ownself is entirely ignored except in a few isolated instances. It has been estimated (Chowdhury Mukhtar Singh) that the skill, education, personality and character of the peasant contribute as much as 40% towards agricultural production. He is the commander of his work and when he himself is ill-equipped for the task, how can we expect the best of results.

The agriculturist clings to the soil for there is no other source of income open for him. He has no stake in his land. He has no incentive to exert himself any more than would be sufficient for him to keep his body and soul together. He has no yearning to live a better life. All the calamities of nature he accepts as being his inevitable fate. He lives a precarious existence. He earns anyhow,

he lives anyhow, he eats anyhow. He is the meekest specimen of humanity, the 'poem of pity'. He has desires without hopes and resposibilities without rights. His entire crop is lost between the landlord and the moneylender and possibly with a debit balance. After the World War II it apprears that the drain on account of landlord and tenant has decreased appreciably but this seems to be shortlived relief only.

In any programme of production best results can be achieved only when all the factors of production are of equal efficiency, otherwise the efficiency of all other factors will sink down to the efficiency of the least efficient factor. It implies therefore that undue emphasis upon irrigation, manure, seed and the like and neglect of the cultivator will take us no where, for the efficiency of production will not rise unless there is a simultaneous improvement in the efficiencies of all other factors including the cultivator himself. All our plans of increased agricultural production, however well-intentioned, promising and excellent they may be, will not fructify, unless the peasant is given the central place. All the measures of the plan should flow from him and not surround him coming to him from all sides. But this is either ignored or too easily forgotten. Royal Commission on Agriculture (1927) had laid great stress upon the personality of the agriculturist himself and his outlook as supplying the key to rural welfare and improvement. But this valuable advice has been totally disregarded.

Create such conditions that the cultivator will begin to feel a stake in agriculture, that will provide incentive for putting increased effort in his land. Agriculture should be taken as a way of life, as a way of business it has little chances of surviving. Shake the agriculturist from his slumber of despair and despondency, let him enjoy a feeling of independence, a hope for the coming bright future. One of the main reasons of success of agriculture in America is that the agriculturist there has not yet lost his traditional spirit of independence. "Farming in Europe, indeed is a tradition, a way of life, a civilization and any attempt to regard it merely from the cash aspect, it must fail. The European farmer is attached to the soil by strong ties..... There is a longing for farming, but it is a love of the technique of the fine art of individual persuasion of nature of immediate contact with the earth and its fruits". (World Agriculture pp. 134 & 140)

Mr. W.H. Moreland while speaking on the "Outlook of the Indian Cultivation" says in the Report of the Royal Commission on Agriculture—

"It may be affirmed with confidence that the welfare and prosperity of the rural population will not come by technical advances alone. The will to live better will furnish the driving power that is required..... in other words the central problem is psychological, not technical..., the dominant feature in Rural India at the present day is that the will to live better is not a force to be reckoned with except in particular circumstances."

Therefore we have to create in him an urge for a better life, change his dismal attitude of life. Lack of ambition is the stagnation of life as Radhakrishnan says, "while virtue is a steady pursuit of something higher and higher; vice is self-satisfaction. The spirit of self-satisfaction is the infallible mark of an inferior mind. The worst thing that can happen to anyone is to lose the consciousness of

Tenancy Amendment Act came into force in 1947. The Consolidation of Holdings Act, U. P. Court of Wards Amendment Act 1947, the U. P. Village Abadi Act 1948, the U. P. Land Utilisation Act 1948, all these relate to agrarian reforms. A Zamindari Abolition Committee was appointed and it has recommended to Government to abolish all zamindari in the Province. About Rs. 130/- crores of compensation will be paid to about 23 lakh zamindars. Two and a half per cent interest bearing bonds payable over a period of 40 years will be given in payment of compensation. Agricultural improvement, reclamation of cultivable waste, redistribution of holdings, development of irrigation and drainage, spread of industries, are some of the recommendations made by the Committee to Government. They have also observed that spread of proper education and effective democracy are expected to exercise a healthy influence and the fear expressed in some quarters may prove imaginary.

Orissa—

The Government of Orissa have brought about reforms to provide cheap agricultural credit and to amend the Tenancy Acts for the benefit of cultivators. The Agricultural Debtors Relief Act and the Orissa Moneylenders Act provide considerable safeguards against exploitation of agriculturists by the village moneylenders. After the Congress Ministry assumed office in 1946, the following Acts have been enacted with an object to improve the position of the tenants: The Orissa Tenancy Amendment Act 1947, giving security of tenures to under ryots, and 2nd Amendment Act, making division of tenancy by metes and bounds on the landlord, the Rent Reduction Act, the Madras Estates Land Act 1946, giving occupancy right to the tenants of Inamdars.

Orissa Tenants Protection Bill 1948 has been introduced and it seeks to improve the status of the 'Bhag-chasis' and gives protection against eviction and in respect of the produce rent payable by them. The Collector is empowered to settle all disputes between the landlord and the tenant. After the receipt of the recommendation of Land Revenue and Land Tenure Committee, the Government would be in a position to initiate measures for the improvement of agricultural production and for introducing more advanced and scientific methods of agriculture.

C. P. & Berar—

The C.P. and Berar Debt Concillia-tion Act, Temporary Postponement of Execution of Decrees Act, the C. P. and Berar Relief of Indebtedness Act, the C. P. and Berar Panchayats Act of 1947, Revision of Land Revenue of Estates Act of 1947, Revision of the Land Revenue of Mahals Act of 1947—all these reforms have given the tenant fixity of tenure and improved his credit in the market by facilitating his rights of transfer with a view to securing for him loan for the improvement of his holding. The important changes that have been brought about by the legislation are: the compensation of Malguzars has been fixed at a scheduled rate; the tenants can obtain proprietary rights for their holdings on payment of Nazarana; and the legislation gives the tenant the same right over the trees as on the holding on which the trees grow.

Mysore—

The Government of Mysore have appointed a Committee for the Revision of the Land Revenue System to examine whether the existing system of land assessment based on the classification of lands into dry, wet and garden requires modification and to consider the feasibility of substituting for it a basic land-tax and graduated scale of tax on agricultural incomes, to examine the desirability of granting exemption or relief from assessment or taxation to uneconomic holdings and to recommend suitable steps for prevailing fragmentation of holdings below the economic limit and to examine the need for a Tenancy Law on the lines of Bombay Tenancy Act and similar legislation elsewhere in India and to suggest measures for suitable legislation in the State. In order to facilitate the enquiry and give opportunity to all persons interested to place before the Committee their views, a questionnaire has been issued and their reply is awaited. It is hoped that the Committee would be able to suggest ways and means for the improvement of agriculture in the State.

Conclusion

The one important question that strikes most in regard to agrarian reforms of any country is: How are we to evolve the system of peasant proprietorship and place it on secure foundation? To achieve this, Sir Manilal B. Nanavati suggests that a Government which is keen should take the following steps:— declaration of all land as state property; elimination of intermediary interests in land; lands to be given to actual cultivators with occupancy rights; each occupancy holding to be an economic unit; making the farmer live on the farm or as near to it as possible; cultivation of the land by the man who owns it; abolition of share cropping and its substitution by low cash rental based on a certain multiple of Government rent; assessment on land to be graduated, uneconomic holdings paying less or nothing; agricultural income-tax to tap more revenue from the larger groups; and regulation of land values on the basis of yields; abolition of speculation in land and provision of cheap finance for cultivators.

The success of the agrarian reforms would largely depend upon the efficiency of the administration. The existing Revenue Department by itself would not be able to cope up with the work. To deal with complex problems like land transfers, fixation of rentals, consolidation of holdings, realignment of roads, etc., a separate department called Land Reforms Department with efficient and qualified men more akin to that of Settlement Department is very necessary; because these problems require immediate decision and quick action. Thus Indian agrarian reforms need both a comprehensive and coordinated agricultural policy for the whole country. It is earnestly hoped that the Central Government would take action and contribute to formulate such a uniform policy.

PRODUCE FOR PROSPERITY

By: Dr. S. B. Singh

EVER since life was first born on this planet food has always been the most important problem for all living organisms. Search for food has always led to mass migrations of important human races and struggle for food has brought about evolution and unrecognisable changes in the whole animal and even plant kingdom. Food is the all absorbing daily problem of major portion of the human population not only of India but practically of the whole world. Food is the motive power behind all human activities and one of the great military leaders has rightly remarked that armies do not march so much on their feet as they move forward on their stomachs.

The present scarcity of food in this country is so well known that it needs no further decidation. In spite of the heavy expenditure on importing food running into 100 crores or so every year, we are still faced with rising spiral of food prices. The problem before us all is to devise ways and means for increasing food production. For this it is necessary to know the factors which are limiting the food production and also how these limiting factors can be overcome. It should be clearly realised that man and wild as well as domestic animals are incapable of producing a single grain of food, directly or indirectly and all animals including man, vegetarian or otherwise, depend entirely on the food manufactured in the green leaf of the plants. Man has not succeeded in producing any other effective mechanism for utilising Sun's powerful energy in manufacture of food. All methods of increasing food production therefore are directed towards increasing the efficiency of the plant and helping it in manufacturing more and more plant food. The more the man helps the best plants to cover the largest areas to capture most of the Sun's rays for food production the greater is the quantity of food produced.

The rate of plant growth and final food production is dependent on several internal and external factors. Among the internal factors by far the most important is the biological constitution of the plant or its variety. Sugarcane crop for instance assimilates carbon and manufactures food material far more rapidly as compared to paddy crop sown in similar area. Similarly, heavy yielding vegetable crops such as potatoes, sweet potatoes, cabbages, papayas, brinjals etc. produce larger quantities of food per acre as compared to some of the cereal crops. Different varieties of various cereal crops themselves differ in vigour and production. This work of selection of the best types and production of more vigorous varieties by method of crossing and selection has been going on for a long time. The Agricultural Departments have evolved vigorous varieties of nearly all the common crops. These improved varieties are capable of giving 10 to 20 per cent higher yields than the indigenous varieties. The selection and evolution of the best types and their seed multiplication and distribution among cultivators so far has received greatest attention from the Agriculture Department. The area under improved varieties of sugarcane, wheat and paddy has extended fairly rapidly. The quantity of seed

distributed by the Agricultural Department in U.P. alone had arisen to about 1¾ million maunds. It was however felt that seed distribution and multiplication has eclipsed all other espects of agricultural development. About one million maunds of seed along with the seed stores has therefore been transferred to the Cooperative Unions. The remaining seed will be stocked in perfectly pure condition in the basic seed stores of the Agricultural Department. Both the Cooperative and the Agricultural Department are trying their best to replace the inferior seed by improved and heavy yielding varieties.

All the practical farmers realise that change of seed alone can improve the production by only about 15 percent but the real limiting factor in food production in this Province is the insufficiency of manures. The best varieties of seed give their best yield performance only when the fields are properly cultivated, manured and irrigated. Realising the importance of manure, the Agricultural Department started a large scale compost manufacture both in towns and in villages. The target of compost production during the current year is 24 crore maunds in villages and 55 lakh maunds in towns. This system of manure preservation being new, a fairly large staff has been appointed to train the cultivators in compost making. Preservation of cattle urine for manurial purposes in villages is also in progress. To further improve the fertility of the fields 50,000 maunds of Sanai seed is being distributed at nearly half the price for green manuring during the current Kharif season. Green manuring has been found to be one of the cheapest and the most effective methods for improving the fertility of the soil. To further supplement the manurial resources of the cultivator, 1,000 tons of bone meal is being supplied at almost half the cost. The Agricultural Department has fixed a target of 6 lakh maunds of oil cakes and 20,000 tons of sulphate of ammonia to be applied in the fields for increasing the grain production in the United Provinces. All these targets are expected to be achieved, and these will help in an effective solution of the food problem of the United Provinces.

At this stage I would like to impress it clearly that the cooperation of the cultivator is of the greatest importance in achieving these targets and unless he is made fully manure-conscious which unfortunately he is not at present, the food problem will always remain unsolved to a certain extent in this province. A large number of demonstrations are being laid down on the cultivator's fields to clearly impress on his mind the value of compost as well as oil cake and other manures to make him realise that cultivation of fields without adequate manuring is not a profitable business and so long as he is careless in feeding his soil, the soil also does not care to feed him. Through continuous research during the last 8 years in the different parts of the United Provinces it has been definitely established that keeping a few good milch cattle on cultivator's holding increases the profits of his holding by about 140 per cent. The profits of the farmer who keeps milch cattle increase on account of increased supply of manure to his fields and increased returns from the milk and the progeny of the cattle. There is not the slightest doubt that a Kisan who arranges to supply adequate manure to all his fields is far more prosperous as compared to those who do not care and arrange for

adequate manure supply for all their fields. This fact is being brought very pointedly to the attention of all the farmers in the province through ocular demonstrations on their own fields.

Plant life is almost wholly dependent on the moisture condition in the soil. It is impossible to raise maximum crops without adequate irrigation facilities. With a view to improve irrigation facilities, the Government is subsidising sinking of masonry wells, boring and installation of Persian wheels on the existing wells as well as new wells under construction. Installation of tube-wells and power pumping plants are also encouraged and subsidized by the Government. It is also proposed to install 100 Persian wheels and 50 pumping plants in large tanks and to subsidise the cost of irrigation. The tank digging drive in the eastern and north-eastern districts is also producing very good results and the irrigation facilities are rapidly increasing there. These tanks are further proposed to be used for stocking fish and in some cases for Singhara cultivation. The cultivators are being helped through supply of a large number of Agricultural Implements viz. ploughs, cultivators and other agricultural implements such as threshers, chaff cutters, etc. It is fully realised that food production from fruit and vegetable crops for a given unit of area is not only larger but also healthier than cereal crops. With a view to increase food production therefore a Horticultural Development Scheme has been launched in nearly half of the province and lakhs of plants are being supplied to cultivators for planting several thousand acres under fruit orchards.

The quantities difference observed in food production from field to field and cultivator to cultivator are so great that this factor cannot be ignored in any future scheme for maximising food production. Sugarcane yields for instance vary from 100 to 1700 maunds per acre. Similarly production of wheat varies between 5 and 40 mds. per acre and so on. These individual differences in production are often results of so many natural and climatic factors, but knowledge, experience and hard work of the grower are the most important of all. It is therefore proposed to teach all the students in the Agricultural Colleges and schools, the art of raising maximum crops with their own hands so that in due course through them the knowledge and art of growing big crops extends to the whole of the province. No doubt this is a long range work but it is bound to produce a great effect on the agricultural economy of the province in due course. Government also proposes to inculcate in all the rural schools of the province the most important and basic principles of agriculture so that boys will turn out to be successful farmers when they take to this business later on. The Government is giving interest-free loans for breaking up new land and clearing jungles for agricultural purposes. There are a large number of well-to-do farmers who are actually engaged at present in breaking up new land for increasing the cultivated area of the province.

The United Provinces Government's own efforts have succeeded in clearing large tracts of jungle in the submontane Tarai, Ganges Khadar and Bundelkhand Kans infested areas. The total area brought under cultivation on these and other farms newly started in hitherto uncultivated land is about 30,000 acres. Nearly 25,000 acres of these newly cultivated lands are already under Kharif crops

d if there are no natural calamities, the P. Government hopes to produce about lakh maunds with the help of its own ıctors and the tractor units supplied by e Central Government. In these days food shortage this addition of about lakh maunds from the areas which were ing waste so far within a short period less than a year will be a great achieveent. It is proposed to bring additional eas under cultivation in these regions ery year and very soon the areas ought under cultivation directly by overnment will run into lakhs of acres. is hoped that in the near future these wly cultivated blocks of land will be more intensively cultivated by new settlers from amongst the refugees and others.

In the end I would once more emphasise the great necessity of fullest cooperation from the cultivators and farmers of the province who are fighting on the food front. The work of food production to meet the scarcity in the country is of the greatest importance and in no way less honourable than any profession including that of a soldier who fights and defends the country and who is to be kept in vigorous health through proper supply of food.

SELF-SUFFICIENCY IN MANURES TO MAKE INDIA SELF-SUFFICIENT IN FOOD

By: R. S. Shiwalkar

A Clear view of the agricultural economy in India as it exists today gether with the knowledge and experice in regard to technological possibilities develop Indian agriculture opens e field of per unit production with ımence potentialities. Per acre yields of ops in India are deplorably low as mpared to those in other countries of e world. Observations on cultivators' elds and experiments conducted at veral Research Stations throughout the untry have proved it beyond doubt that adopting proper methods of cultivation ıd applying adequate quantities of itable manures the per acre outturn of ops in India, in most of the cases, can raised over 100 percent in a very short eriod of time. As a worker in rural areas ıd as a student of rural economy, I have bserved it for myself that there is little that can be done to improve the methods and cultural practices adopted by Indian peasants in most of the Provinces of the country. The one and only one thing which figures bright in the agricultural development of our country is the extensive use of natural manures which alone can go a long way at this critical juncture in solving India's food problem not only temporarily but as an effective and practicable permanent measure.

Potentialities to Develop the Natural Manures

India is very rich in her natural manurial resources which, for most of the part, remain unexploited even today when the country is on the verge of extinction in respect of her economic freedom. The following figures for the Central Provinces and Berar very well illustrate the position in this respect.

Source	Plant food elements obtained per head per annum.	Adult population.	Area that can be manured in one year @ 20 lbs. plant food per acre.
	Lbs.	Millions	Million acres.
Cattle dung	27*	9.6*	13.0
Cattle urine	72*	9.6*	34.5
Human excrements	15	10.0	7.5
Total	37.7	29.2	55.0

Total area under crops including the area cropped more than once in the Central Provinces and Berar is about 27 million acres.Of these about 5 million acres grow, pulses which do not require manuring of the land on which they grow, on-account of the nitrogen fixing quality they possess. The Province needs only 22 million acres to be manured at the rate of 20 lbs. on an average of plant food nutrients per acre. In the Central Provinces& Berar alone if the three major sources of natural manures are fully exploited, manure sufficient to cover more than twice the area cropped in the Province can be obtained. So immence are the potentialities and great are the possibilities to afford a permanent solution of this problem through suitably workable plans.

Scope for Self-Sufficiency in Manures to Raise Agricultural Production

At present cattle urine and human excrements are utilised as manures to a very negligible extent. Cattle dung more than half of which is burnt, is carelessly and improperly conserved to produce the bulk of organic matter having lost much of its plant nutrition and used as the chief and perhaps the only manure by majority of the cultivators. This apathy and total neglect of the manurial development of the country has been responsible to a very great extent to the miserably low crop yields per acre in India. Field expriments conducted in the various parts of the country significantly bring forth that an application of about 20 lbs. nitrogen and other food elements, other things being equal, increases the outturn of food crops by about 300 lbs. on an average, per acre. In other words, a full dose of manure per acre increases the yield of a crop by about fifty percent or so. Estimating a quarter of the present area under food crops to be receiving full dose of manure and if adequate manures of desired qualities are arranged to be applied in full dose to the remaining seventy-five percent of the land growing food crops, an over-all increase of a conservative minimum of twentyfive percent of the present food production will not be an imaginary and a fictitious target to be aimed at.

Reverting to the illustration of the C. P. and Berar again, it will not be vain audacity to confidently state that the province can be made self-sufficient in respect of manures from the three major sources. Allowing twentyfive per cent of the dung to be burnt, two third of the cattle urine to be lost and nine-tenth of the human excretions to be left untouched, the province with the remaining quantities of available

*Department of Agriculture, Central Provinces & Berar, leaflet No. 1 of 1949, Page 3.

cattle-dung, cattle urine and human excrements can produce enough manure to cover 22 million acres in the province that require manuring as shown in the following table:

Material to be conserved as manure.	Potentiality to manure land @ 20 lbs. plant food elements per acre.	Percentage of total available material to be conserved as manure.	Area that can be manured by such conserved materials
	Million acres		Million acres
Cattle dung	13.00	75	9.75
Cattle urine	34.50	33	11.50
Human excrements	7.50	10	0.75
Total	55.00	40	22.00

Without going into the details it can be said that what is true of one province may be regarded as true for the entire country with slight variations here and there regarding selfsufficiency in manures on the modest lines indicated above.

In view of these immence potentialities of the country in her natural resources to produce beneficial and rich manures there is hardly any necessity either to import or to manufacture large quantities of artificial fertilizers. The western countries, where agriculture is highly mechanised, lack in such potentialities and are hence compelled to depend upon some artificial meterials to supplement their deficient supplies of natural manures. We must, no doubt, move with the times and walk shoulder to soulder with the progressive countries of the world. At the same time we must be conscious of our own social, cultural and economic surroundings and refrain from blindly copying the measures which have benefited other countries under their conditions. Experience of the progressive countries should guide us in evolving basic plans and methods suitable and practicable under the peculiarities of our country. "The Grow More Food Campaign" in future, therefore, should concentrate all its efforts and finances to increase manure production of the country. Instead of subsidising use of imported artificial manures and wasting efforts in popularising their use, let agriculturists be granted finances and facilities to exploit their own resources as fully as they can and the natural manures so obtained may be supplemented by oilcakes and fertilizers already manufactured in our country.

Some Practical Hints to Achieve the Object

The task is, however, not as easy as it appears to be. General poverty and ignorance of the masses in rural areas, consequent lack of resourcefulness and conservative habits offer a very great obstacle and an impediment in achieving the desired object of self-sufficiency in manures to make India self-sufficient in food and raw materials by over-all increased agricultural production to the tune of a quarter of the present level of crop production. Mere propaganda demon-

strations and other persuasive methods are not supposed to be effective to tackle this most difficult and threatening problem of the day. For successful working of a plan for self-sufficiency in manures not only the activities of a cultivator but every ounce of droppings of his animals will have to be kept under close supervision and control so that all the manurial wastes are properly conserved and the manures so prepared are carefully and properly utilized.

Simple and practicable methods have been worked out by Dr. C. N. Acharya of the Central Government and by Dr. K. G. Joshi of the C. P. Government to usefully conserve and convert cattle dung, cattle urine, town and rural refuse and human excrements into rich manures without disturbing the hygienic and sanitary conditions of the locality.[3] There is a great deal of scope for researches to evolve simpler and better methods adaptable under the varying conditions within the country itself from one part to the other to conserve the organic waste materials to produce richer and richer manures. To these researches may be added knowledge about the method or methods of application of these manures to land without appreciable loss in plant food content of the materials. All the precautions and care taken during the process of composting to prevent loss of nitrogen etc. are likely to be nullified by exposure of these materials to the hot sun for a period varying from one week to several weeks. Much light has not been thrown on this point but simple and practicable methods would soon be advocated for this purpose also.

Another requisite to work the plan is to create suitable Government machinery to organise activities to conduct research as well as to take charge of the effective field work. Researches will confine themselves to devising cheap and simple methods to improve the quality and quantity of the natural manures by employing scientific knowledge to advantage under conditions existing or likely to continue to exist in our country. The field workers will organize themselves to effect proper utilization of land and meterials available in each village and with each farmer. The organisation should be empowered to excercise some control over land and manure utilization of a place. They should carefully record facts about the rural economy of each tract and territory so that researches in agricultural Economics, completely neglected in past and even today resulting into the present detrimental unbalanced economy of the nation as a whole, would be carefully conducted to revolutionise the agrarian structure of our land by adopting measures leading to all-sided development of the country.

Conclusion

The immediate solution of making India self-sufficient in her food supplies, therefore, lies in concentracting all our efforts, energies, finances and talent with the necessary spirit, zeal and co-operation of the various national elements, to make the country self-sufficient in rich manures by effectively and efficiently exploiting the chief natural manurial sources of the country. This does not mean that opening of fallow and culturable land should be given up, irrigation

3 Proceedings of the All India Manures (Compost) Conference at Nagpur in July 1948.

facilities should not be extended or improvements in other directions should be stopped. One point of importance may however be emphatically stated that the desired effect of all such improvements and achievements will again be limited by the availability of suitable manures necessary for intensive cultivation. Hence, the one and the only one factor which can hopefully be relied upon to grow five blades of grain where four grew before and even at present, is to conserve and convert maximum amount of organic waste materials into rich manures. Self-sufficiency in manures will not only solve the food problem but it will definitely raise the standard of India's agricultural production, which is ardently implored and craved for, for the economic development of the country, particularly to fight the second evil of inflation of equal magnitude. Hence, with heaven above and heart within, we must be up to discharge our duties honestly and sincerely to maintain life, dignity and honour of our nation in these trying circumstances, by taking radical steps if necessary.

Development of natural manures does not involve any capital cost nor does it need any outside aid except initial training of individual cultivator to adopt the technique of conservation methods which are specially designed to suit the farmers of our country. And to be practicable for the average cultivator, Prof. Radhakamal Mukerjee has rightly said that an improvement must not call for much new capital but can, with advantage, call for a substantially increased amount of human labour[4]. Nothing should, therefore, deter us from successfully making India self-sufficient in food through self-sufficiency in natural manures followed by and associated with other desired changes.

INCREASED FOOD SUPPLIES THROUGH SCIENTIFIC STORAGE

By : Dr. Trevor I. Williams

THE urgent need for increased food production to provide for a rapidly increasing world population is generally known. Almost equally important, but far less appreciated, is the need to prevent the destruction of food by various pests after it has been put into store.

Enormous losses of this kind are incurred every year. Often the culprits are sizeable animals such as rats and mice, but creatures almost too small to be seen, such as weevils, can be even more destructive, and do millions of pounds' worth of damage every year.

In Britain this problem became acute on the outbreak of war, for to safeguard food supplies in case of emergency it was necessary to accumulate much larger stocks of grain than normally and to lodge them in buildings which were never intended for food storage. To solve it the Department of Scientific and Industrial Research set up a special laboratory for pest control in 1940. This was so successful that it has been decided not only to make it permanent but to extend its activities widely so that pests of all kinds can be kept within bounds.

4 Economic Problems of Modern India by R. K. Mukerjee, Page 128.

general economic improvement of the ryots in the Taluk and include among other activities the following:—

Functions of Taluk Multipurpose Societies

The objects of the Taluk Multipurpose societies are:

(1) To encourage thrift and savings, self-help and co-operation among the members.

(2) To finance loans for several purposes such as purchase of ploughs, milch cattle, agricultural implements, etc.

(8) To arrange for supplying the farmer's needs for production, like seeds, manure, agricultural implements etc.

(4) To arrange for sale of agricultural produce in the nearest marketing organisation at the highest possible price. The questionable practices like unfair commission and false weights will disappear.

(5) To encourage subsidiary activities such as poultry farming, bee-keeping, dairying, weaving, brassware, basket making, manufacture of sandle sticks, pottery, mat making, coir making, rope making, paper making etc., and to supply machinery and raw materials required therefor and arrange for the sale of finished products.

(6) To supply domestic requirements to its members like cloth, yarn, kerosene, salt, matches, pulses etc., on the basis of established needs at the cheapest possible rates.

(7) To undertake construction of houses for rural people in villages.

(8) To serve as milk collecting centre or milk union centre for the supply of milk.

(9) To maintain stud bulls and buffaloes with a view to improve the cattle breed in taluk and to stock cattle feed.

(10) To undertake co-operative farming and to bring into cultivation on scientific lines all waste lands in the villages.

(11) To arrange for liquidation of prior debts in all cases recommending such cases to Land Mortgage bank.

(12) To provide medical facilities and public health amenities to the extent possible.

(13) To introduce better living measures by checking the members to stop all wasteful litigation and to take interest in primary education and eradication of illiteracy.

(14) To help the village primary societies in their proper discharge of duties.

(15) To take other items of work as will be conducive to the betterment of the village as a whole.

Main Function of the Multipurpose Society

One of the main functions of the Taluk Multipurpose Society is to arrange short-term credit to agriculturists. At present the Ryots do not obtain their credit at cheap rate of interest. The problem of Rural finance has been engaging the attention of several co-operators and no substantial results have been achieved so far. The loans should be arranged to be given readily to the agriculturist during the seasonal operations. The local money-lender knows the credit-worthiness of the farmer and readily gives the money required though at prohibitive rate of interest. The Co-operative institutions cannot sanction or

advance money without observing the formalities which eventually lead to inordinate delays. Several methods have been suggested for solving this problem of rural finance :—

(1) The grant of loans in advance by a regular system of "Forecast loans."

(2) Grant of loans in advance by adopting the system of "post sanction."

(3) "Loans" on standing crops.

(4) "Produce loans" on the produce or the yield.

(5) Sanction of overdraft secured by growing crops or crops to be grown.

Short-term Loans

The problem of short-term loans has yet to be thoroughly and scientifically solved so as to enable the farmer to get the loan without undue delay as and when he desires and adequate to his needs.

The best way of solving the problem would be:

(1) To assess the credit-worthiness of each member and to draw statements of credit limits so fixed based on the unencumbered property he owns. If once such a statement is prepared, further elaborate investigation every year can be avoided and no further enquiries are necessary at the time of renewal of loans each time.

(2) To allow cash credit up to 75 per cent of the property so valued.

(3) The Multipurpose society should be treated as a financing agency to grant loans up to 75 per cent of the limit whenever the farmer needs. The loans have to be granted by instalments according to the needs. In any case, the maximum loan should be limited to Rs. 5,000.

(4) The societies are expected to keep ready cash with them to grant loans instead of recommending the same to any bank for getting funds.

(5) These Multipurpose societies are expected to stock all the farmers' needs such as manure, implements and seeds. These agricultural requisites may be given to the members either for cash or on credit upto the limit which should be restricted in all to 75 percent of the property value.

(6) The produce which the farmer gets should be sold through these multipurpose societies, the realisations being credited to his loan account as and when realised.

(7) This reduces the interest for the reason that interest is charged only for the loan which is outstanding.

(8) This system provides for gradual and complete redemption of the loan as produce is sold.

(9) The adjustment on credit requirement and repayment helps the farmer to regulate his needs and expenses.

(10) The loans are generally to be repaid within one year out of the current year's income.

(11) But if the credit limit which is allowed remains satisfactory, easy renewals may be effected in case of necessity.

This system of allowing controlled credits to individuals on continuous mortgage bonds and enabling the Multipurpose Societies to sanction loans readily up to the limit clearly specified satisfies the needs of the ryot without relapsing into original state of indebtedness.

A picture of the Department's work is given in its first report, just published.

Pioneer Work

Fortunately the Department had quite a lot of pioneer work to back it, for as long ago as 1927 Professor Munro of the Imperial College, London, began a detailed study of the insects which infest material stored in London's many ware-houses. At first he worked alone, but very quickly various industrial organisations realised the importance of what he was doing, and funds were provided for a complete research team which was able to give all its attention to this subject.

Nevertheless, when war broke out much remained to be learned, and conditions arose which had no parallel in time of peace. The new Department turned almost its whole attention to conserving grain stocks—the most vital of all the country's reserves. They had two main lines to work on. On the one hand all the most serious pests were identified, and their life histories were worked out in detail so as to discover their most vulnerable points; on the other, practical methods were evolved for the protection of stored food against infestation, or to eradicate pests which had gained a foothold.

The enemy proved a formidable one varying greatly in his ways of attack and vulnerability to the weapons directed against him. Nevertheless, although it was never possible to prevent all losses, the damage was reduced much more than at first seemed possible.

Wealth of Information

The investigations—which have continued without break upto the present time—produced a wealth of new information, useful not merely for the immediate practical purpose, but also for throwing light on biological problems of fundamental importance.

A notable advance has been in the perfection of a quick test for determining how much a given sample of grain is infected. This is no easy task, for often insects tuck themselves away out of sight within the individual grains. One way of detecting them is to incubate the infected grain and catch the insects as they hatch out, but this is often too slow and laborious to be useful.

A much better way was found to be the measurement of the breathing of insects. If infested grain is incubated for a day the grain itself produces no carbon dioxide gas, but the hidden insects breath this gas out in quantities big enough to be measured. Roughly speaking, the quantity of carbon dioxide gas evolved is a measure of the seriousness of the infection.

Delicate Methods

Delicate methods were evolved for measuring the quantity of carbon dioxide in the air spaces between the grains, even in the depths of vast grain silos, where many insects were unexpectedly found to breed quite freely in spite of great pressure and lack of air. Another test, which in its final form involved nothing more than a colour change in a piece of paper, was used to measure humidity—another vital factor in insect development. By these means it was possible to spot the foci in the grain.

These were important discoveries for it was learnt that infection spreads outwards from such foci. The insects produce heat which is not easily

dissipated, and this in itself spurs them on to greater activity. Finally, heat kills the insects at the centre of the spots of infection, and drives the others outwards to continue their activities under more favourable conditions.

Practical methods were worked out for fumigating grain, particularly with a new fumigant called methyl bromide. This required much original work, for although fumigation of grain had been practised in other countries even before the war, little was known of the dangerous substances which might be produced as a result. Consequently there remained a possible danger to public health, and the new methods were only put into operation after experts had satisfied themselves that the process was harmless.

Study of Insecticides

Special attention is being given to a study of the way in which insecticides work. It is not sufficient to know that an insecticide will kill pests under laboratory conditions—it is necessary to know just how it acts so as to work out a satisfactory method for applying it under the very varied conditions which exist in ordinary warehouses and stores. These studies have resulted in a lot of new information about the vital processes that go on inside living cells.

The laboratory now has activities far beyond its main wartime aim of protecting stored grain. For example, studies are no longer limited to commercial products. Household pests, as well, which in the aggregate cause the public a great deal of annoyance and loss, are being studied. Investigations are also being extended to fungi—which include common mildews—which cause a great deal of damage to food and property.

Now that the stress of war is over the main aim is to build up steadily a store of fundamental knowledge about all serious pests as well as to study problems of immediate practical importance.

MULTIPURPOSE SOCIETIES

By: T. Rangaswami

One Society for Each Village or Group of Villages

It is proposed to organise a society for each village or group of villages on a limited Liability basis with a view to make the co-operation a live force in the economic regeneration and social uplift of the masses. The idea is to consolidate the movement and expand its activities so as to bring all the villages within the co-operative fold.

Village Multipurpose Societies

At present a Consumers' Store will be organised in each village to cater to the daily needs of the villager, such as kerosene, salt, beetlenut, matches, pulses etc., and later on they should be converted into Village Multipurpose societies so that other activities such as credit or marketing may be undertaken to embrace all aspects of ryot's life. These societies will be affiliated to Hobli societies which in turn will be affiliated to Taluk Multipurpose societies.

Taluk Multipurpose Societies

The Taluk Multipurpose Societies should be remodelled and re-organised so that they may serve as a centre for the

Multipurpose societies are expected to provide themselves with a capital of at least one lakh of rupees and also they are expected to attract fixed deposits and to obtain advances from Apex Bank or from the Government at cheap rates of interest so that the ultimate borrower may obtain loans at 4½ to 5 per cent.

It is proposed to provide go-down accommodation at each Taluk Headquarters for the storage of produce of agriculturists as marketing is also an important function of the multipurpose societies. The system of linking up credit with marketing is the main feature in the organisation of multipurpose societies.

State assistance is necessary in the form of subsidy for at least five years towards establishment charges and construction of go-downs at Taluka Headquarters.

GROW MORE TREES

By: P. N. Devgun

WE have been raising the slogan of "Grow more food" for some time. There is no doubt that this is of primary importance. "Growing more food" is dependent on many factors and one of them is 'manure'. Properly manured fields can yield much more than unmanured ones. When the labour involved on preparing the ground, sowing of seed, looking after the crop till maturity and the quantity of seed used are the same for manured and unmanured fields, who would not like to collect the maximum quantity of food the field is capable of yielding by putting in a little extra labour on manuring? But is it done adequately? No. Why? Where is the requisite quantity of manure to come from? It is easy to tell the cultivator to use all the cowdung for manuring the fields and not to burn it but is it possible unless we can provide him with an alternate source of fuel? He must cook his *dal*, *roti* and have some fire to warm him especially when his supply of warm clothes is meagre.

To overcome this difficulty we must raise the slogan 'Grow more trees' side by side with "Grow more food". Land that can be utilized for growing food crops need not be covered with trees but no land should be left unoccupied. Some use must be made of all the land at our disposal. If we cannot grow food crops let us have fodder, if we cannot have fodder, let us have trees for timber, for firewood, for leaf fodder, for fruit etc. If we cannot grow trees straightaway let not the land erode away, but cover it with some vegetation, this will improve the soil and make it fit for better future crops.

There is plenty of land which can be taken up for tree planting: roads, village paths, irrigation channels, village Shamlats, compounds and fields. In the case of Shamlats and fields the only question to be considered is intensity of planting and the kind of plants to be introduced. In village shamlats and grazing grounds and fields, only such species and numbers may be grown as will not interfere with the growth of grass and fieldcrops, rather improve them.

There is no doubt that villagers need trees and like to have them. Any that come

up in their fields are protected by them. It is only in shamlats and other places not owned by them or owned in partnership that they pay little attention or even damage. They are not conversant with the methods of growing and tending trees. If we were to tell them that they can have twenty feet high trees in two years they are sure to ask for them.

The best method for growing more trees and for covering up blank areas which at present yield nothing would either be through the Government or the village Co-operative societies who should run nurseries at convenient centres and distribute plants at the proper time of the year with full instructions and if need be have them planted themselves. Certain days can be set apart each year when every one can be requested to come out and plant a tree. School children and their teachers can be of great help.

It may be noted that for a number of species the process is very simple and stumps (root and shoot cuttings), planting of which is simplicity itself, can be supplied. Species like Shisham can be grown to about 25' in 2 years if grown properly (vide How to grow Shisham written by the author). The methods noted apply to many other similar species.

With proper planning we can change the face of our land.

IMPORT AND CULTURE OF MANGO TREES

By: V. S. Bendrey

INDIA is indebted to Portuguese merchants and colonisers of the 16th and 17th centuries for importing very good species of fruit-trees and cultuting them quite on a large scale. Mango (Amba), Jack-fruit (Phanas), Chiku, Apples (Sitaphal) were some of them. The species they introduced on the coastal territories were rich in both quantity and quality. A Venetian traveller, Mr. Nicolas Manuchi, who travelled through many parts of India, has recorded his observations about Mango trees some three hundred years ago:

"As I have promised to speak of the fruits of India, chiefly of the mango and jack-fruit, I may mention that the best mangoes grow in the Island of Goa. They have special names, which are as follows: mangoes of Niculao Affonso, Malaiasses (of Malacca), Carreira Branca (white Carreira), Carreira Vermelha (red Carreira) of Conde, of Joani Perreira, Babia (large and round), of Araup, of Porta, of Secreta, of Mainato, of our Lady, of Agua de Lupe. These are again divided into varieties, with special colour, scent and flavour. I have eaten many that had the taste of the peaches, plums, pears and apples of Europe. The mango is little bit heating and laxative, and however many you eat of them, with or without bread, you still desire to eat more, as they do no harm. While [illegible] are added to dishes, to pastries, [illegible]. The juice of the ripe fruit mixed with milk is drunk, and is sustaining. They also make the fruit into preserves, which are exported to various places; various kinds of pickles are also made, which keep good for two years, and the stones are employed in medicine. The tree on which the mango is grown is the size of a walnut tree; the fruit grows in clusters,

like plums in Europe."—p. 180, Vol. III, Storio do Mogor, Niccolao Manucci, London 1907.

During the Shivashahi period (17th century), Mahrattas rightly followed the lead given by Portuguese and planted mango groves either for shelter for cattle or for camping their armies, thus at the same time providing mangoes of good quality for local consumption. Peshavas did something in the way, but their efforts were not intensive enough. In the British regime, the tendency for plantation of fruittrees considerably declined. Except for some individual landlords and the nature, which helped growing mango trees out of the waste seed thrown out no programme for nursing and culturing the trees of great food value was in evidence in the country. On the contrary, Government and their Departments discouraged it. To avoid nuisance both of cattle and of children, they preferred spending public money on planting less shady and unproductive trees like Shankhasur and Nimb ! The mango trees of inferior quality were cutdown for fuel and timber. Thus we have, through neglect and want of proper foresight, lost the best subsidiary food supply of the country.

The food and nutrition values of mangoes recorded by Government agencies are as under. Perhaps mangoes stand at a much higher level in these values among fruit diet.

	Green mangoes	*Ripe mangoes*
Protein%	0.7	0.6
Fat%	0.1	0.1
Mineral matter%	0.4	0.3
Carbohydrate%	0.8	11.8
Calcium%	0.01	0.01
Phosphorus%	0.02	0.02
Iron%	4.5	0.3
Calorific per 100 grms.	39	50
Carotene Vitamin A	150	4800
Vitamin C	3	13

Apart from food values, the fruit in both the stages is eaten with great relish, and it is a rare instance indeed if anybody has a dislike for it. The use of mango trees for fuel and timber is also not less significant. The life of the tree is long enough. There are trees of more than three hundred years old, still giving good quantity of fruit. The tree does not require nursing and care for more than a year. Once it takes its proper root, it grows on the climatic moisture, remains ever green and affords good shade for cattle in the midday. The fruit season commences just when the staple food of the country goes into scarcity. During this season villagers consume less food as the mango substance they take during the day satisfies their hunger. Had we continued our efforts to grow more trees like mangoes, jackfruit, apples, chiku, kaju, imported by Portuguese, much of our present food deficit could have been reduced. We allowed the permanent source of our foodsupply to be cut out in the past ! Let us correct our mistake and improve it.

With the advent of Independence, the outlook of our administration has changed. Cattle and children of the soil are looked upon with sympathy and held entitled to the benefit of the efforts of the administrators and of the state funds. The welfare of children is now a primary duty of a democratic government. Rationing has made us realise the importance of and need for good subsidiary food. "Grow More Food Campaign" is, however, concentrated on the means for temporary supply of food. Is it not desirable that we stop plantation of Shankhasur and Nimb and encourage fruit trees ? Let our cattle and children enjoy the shade and fruit even with a little nuisance for the present. Once they are assured of their share in

the yield of the trees, they will themselves take care of them to get the best out of them. Let our compounds of primary schools have at least a dozen of such trees as Mango, Phanas, Chiku. At least they will have a good shade to play under. Phanas and Chiku fruit is not disturbed until it is ripe. Apple (Sitaphal) trees are found everywhere in villages; and experience of villagers shows that the fruit is not spoiled by children until it is ripe. Let there be abundance of fruit diet for all both in the rural and urban areas; and with proper encouragement let individual landlords be inclined to develop the tanned-fruit industry supplementing the agriculture so as to raise the standard of living there. If the present outlook is changed, and Government supplied better seed and plants from foreign countries, our villagers will not be slow to help themselves by planting and nursing them all over the village bazar grounds, roadsides, banks of the canals, brooks and rivers and in such waste lands as can be safely utilised for the plantation. Poor villagers can earn livelihood by sale of some products in the nearer ureas. Let Government and semi-Government bodies give lead to villagers and village panchayats in this "Grow More Fruit" programme.

SHEEP NUMBERS AND THEIR SIGNIFICANCE

By: H. K. Lall

THE cattle 'numbers' have received great attention recently because of the important part, they play in the agriculture of the country, and rightly, because without knowing the numbers, which help in finding out the requirements and setting up of targets, no future developments can be planned. The sheep, which occupy no mean place in our agriculture, have not received the same attention. The industrial importance of sheep is considered to be one of the oldest agricultural enterprizes. The word sheep has ancient origin and is represented by terms of Aryan languages, which are derived from the Sanskrit word 'Avi' signifying 'to guard'. This indicates that sheep were highly valued in ancient times as they were designated by the name which meant that they were required to be carefully guarded.

So far sheep breeding has been to a great extent in the hands of nomadic classes, through whose agency it is difficult to make any sustained effort towards improvement, but even then, this industry, which has been in the hands of the poor people, has not received the same attention as the industries like the cotton which is owned by the richer classes. Very often, it is not realised that sheep are a media that provide us with wool, meat, manure, milk, butter, pelts, hairs and serve as pack-animals in some of the hilly tracts. Wool alone, that is produced in the Dominion of India is valued at about Rs. 5.5 crores. In case of wool too, whatever attention has been given, it has been aimed towards the industrial aspect of problem, rather than, improving the management, breeding and feeding of sheep.

All the provinces and states in India have not taken the sheep census regularly, and therefore, there is a big gap in our information. Again, the accuracy of the

methods of enumeration, at the time of census has been questioned because of the doubtful factors that come in, at the time of taking the census. The information is also incomplete in many other respects. For instance, separate figures for young-stock, adult male and adult females, or for hairy or woolly sheep are not available in many cases. Neither are any figures available separately for various breeds, which is so essential to assess *accurately* the amount and type of wool that can be produced in the country. Many of the calculations of the types of the wool produced in the country are based on estimates only. In sheep conscious countries, the sheep population is estimated or in some cases enumerated each year to gauge the progress of the industry and to regulate the trade accordingly. It would be just as well, if a similar procedure was followed here, after a process of estimation, applicable to this country, had been found. To overcome the various difficulties in taking of census and to have more complete information new procedures are being suggested by our Statisticians for the 1950 census as far as human and cattle populations are concerned, and it is desirable that sheep should also receive the attention, they deserve, and all the relevant information as regards sheep population is collected by the adoption of sound methods.

The figures from the provinces, where census has regularly been taken, have been analysed for 1920 and 1945 i. e. for the last quarter of the century. The total figures for British India have also been compared with those of the important wool producing countries of the world.

TABLE I (Sheep population country-wise)

Country.	Year of Census.					
	1920	1925	1930	1935	1940	1945
U. S. A. ...	40,743,000	38,543,000	51,565,000	51,808,000	52,399,000	47,780,000
U. S. S. R. ...	98,100,000	122,780,000	52,960,000	54,200,000	93,000,000	63,400,000
Canada ...	3,027,000	3,431,000	3,492,000	3,399,000	2,653,000	2,822,000
U. K. ...	21,212,000	24,053,000	25,263,000	24,243,000	26,319,000	20,150,000
Australia ...	85,556,000	103,329,000	111,417,000	113,048,000	119,305,000	105,415,000
New Zealand ...	23,382,000	27,516,000	28,793,000	29,077,000	31,063,000	33,975,000
§Indian Provinces	22,705,000	24,167,000	26,817,000	25,121,000	29,132,000	22,944,600

§British India Provinces *1943

TABLE II

(Percentage increase in sheep population as compared to previous censuses.)

Country	Year of Censuses.				
	1925	1930	1935	1940	1945
U. S. A. ...	— 5.4	+33.8	+0.5	+ 1.1	— 8.8
U. S. S. R. ...	+25.2	—56.9	+2.3	+71.6	—31.8 (1943)
Canada ...	+13.3	+ 1.8	—2.7	-21.9	+ 6.4
U. K. ...	+13.4	+ 5.0	—4.0	+ 8.6	—23.4
Australia ...	+20.8	+ 7.8	+1.3	+ 5.5	—11.6
New Zealand ...	+17.7	+ 4.6	+0.9	+ 6.8	+ 9.4
Indian Provinces	+ 6.4	+11.0	[illegible]	+16.0	—21.1

SHEEP NUMBERS AND THEIR SIGNIFICANCE

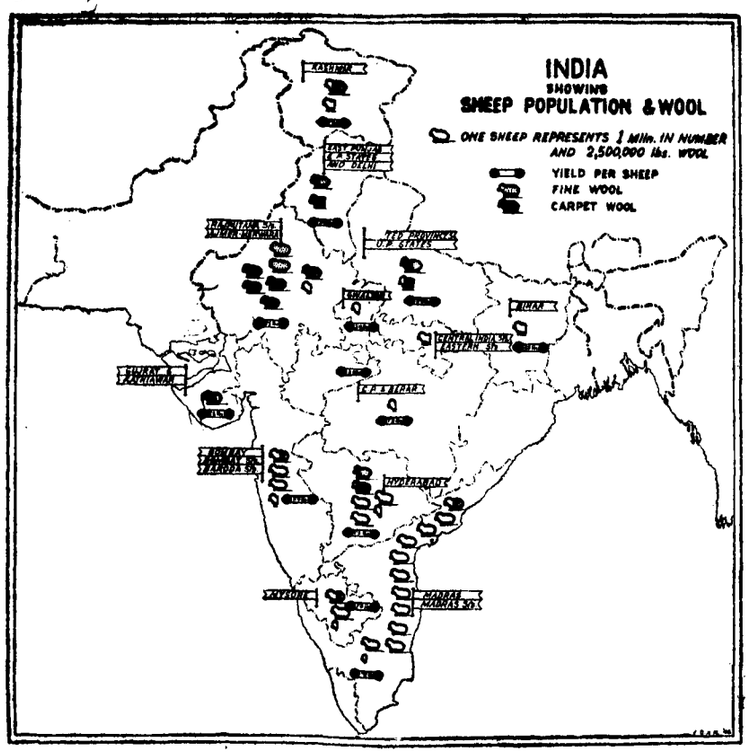
It will be seen from the 1945 census, that the sheep population in almost all the countries went down except in New Zealand and Canada. There is a decrease of 8.8, 31.8, 23.4, 11.6 and 21.1 per cent in U. S. A., U. S. S. R., U. K., Australia, and India, respectively, while there is an increase of 6.4 per cent in Canada and 9.4 per cent in New Zealand. It may be mentioned here that though India possesses 6.7 per cent of the total world sheep population, yet the wool production is less than 1.5 per cent of the world production.

In case of India, it is observed that there was an increase of 6.4 per cent in 1925, of 11 per cent in 1938. This was followed by a decline of 6.3% in 1935 and an increase of 16 per cent in 1940, while in 1945 i. e. the last census, there is a general decrease of 21.1 per cent. The trend of rise and fall of population in all the provinces is more or less the same except in the small provinces of Assam, N. W. F. P. and Ajmer-Merwara, which register an increase in 1945. This, probably, is owing to the influx of population from the neighbouring border areas and states owing to the increased demand for animals for meat. It is difficult to judge the absolute significance of these figures without knowing the exact population of the states, which possess large number of sheep specially, because, the sheep population in many areas specially in Rajputana (Western Desert) is not steady and keeps oscillating, depending on the conditions of the pastures. This of course, is one of the reasons why sheep are reared by nomades and not by permanent settlers.

The decline in 1945 is apparently due to excessive slaughter on account of increased demand of meat for the army. Some of the economic factors over which the sheep farmers have no or very little control and which contribute towards the general deterioration of sheep industry are drought, diseases, wild animals, fluctuating prices of mutton and wool, uneconomic holdings and soil erosion. A detailed study of these factors and their exact repercussions however can only be determined by studying the problems in small areas, because in the study of the population over large areas, the effects of one or more of the factors, are masked by the others, as several of them are in operation at the same time. Nevertheless, it is well known, that soil erosion in grazing areas, which are limited in this country has been on the increase and there has been greater incidence of disease, during the war because of the increased movement from one province to another. These factors must have played an important part in the reduction of sheep population though the major factor as stated above, seems to be excessive slaughter during the year.

A serious view of this decline in sheep population, has to be taken, if the country has to be made self-sufficient in wool. Not only the depression [illegible] to be stopped but steps [illegible] to increase the number of [illegible] quality in a reasonably short [illegible]

Most of the wool produced in the country is carpet wool (see map on page 338), a considerable quantity of which (about 31 million lbs) is exported abroad. Some fine wool is also produced in the country most of which comes from Kashmir, S.E. Punjab, Western U.P., Rajputana, Kathiawar and Mysore. In addition large quantities are imported from abroad for



use in Indian Mills. One of the estimates is, that the Indian Union excluding states produce 6 million pounds of fine wool. On the average of 3 typical years before the war, India as a whole imported 11.1 million pounds of fine wool, the share of the Indian Union on this basis being 9 million pounds. The panel for Wollen Textiles has recommended the stepping up of wollen production by at least 60 per cent, and keeping this into account the total requirement for the Indian Union comes to 14.4 million pounds. To reach that level obviously, a lot of more fine wool has to be produced. This can evidently be done if more and better sheep are produced. At present the yield of Indian sheep is less than 1/3rd or even 1/4th of the sheep in Australia, New Zealand and the U.S.A., the fine wool producing countries. It is, however, encouraging to learn that as a result of the experiments carried out by the Indian Council of Agricultural Research it has been observed that a number of Indian breeds have the potentiality for producing fine wool, that can be developed by the process of selective breeding, which however is a fine consuming process. To attain our targets, therefore, methods, such as cross breeding with foreign fine wool sheep such as Merinos will also have to be adopted. But to give momentum to these suggestions, an organisation, similar to that existing for research and development of cotton and jute is a *sine qua non* for placing the wool industry in its rightful place. Needless to say that such an organisation will also render the much needed fillip to this cottage industry.

BEE KEEPING IN THE SOUTHERN DIVISION OF THE PROVINCE OF BOMBAY

By: S. K. Kallapur

ATTEMPTS were made to introduce beekeeping in the province of Bombay when the Congress Ministry was formed in 1937. A small experiment was undertaken at Honavar in the Kanara District, in 1939 by the All-India Village Industries Association when th help of a grant was made by the Govern ment. The experiment was a grea success. Year after year more and mor persons began to take interest in thi industry as the following figures wil show:—

Year	No. of Bee Keepers	No. of Bee Colonies	Yield of honey in lbs.	Villages carrying on industry.
1939-40	34	46	70	2
1940-41	52	130	580	7
1941-42	133	415	2295	19
1942-43	244	788	4086	21
1943-44	336	957	5925	31
1944-45	459	1277	9361	35
1945-46	607	2052	19001	42
1946-47*	640	2373	9939	42
1947-48	648	2651	16994	42

In 1941, other centres were taken up in the other talukas of the District, at Siddapur, Sirsi, and Yellapur. In the next year the industry was introduced in the talukas of Karwar, Kumta and Bhatkal. After about two years, it was introduced in the taluka of Ankola. There are at the present date 4065 hives in the District of North Kanara. They are owned by 1348 Bee keepers. The total yield of honey in 1947-48 was 16994 lbs. The bee keepers are spread in 135 villages. It will be seen that the taluka of Honawar is able to show the best results. It has over 65.2% of the colonies and is responsible for showing a yield of 75.7% of the District's produce. Cooperative Societies have been established in the talukas of Honawar (1942), Kumta (1944), Bhatkal (1944), Karwar (1946), Ankola (1946), and application has been made for the regis tration of a society for the taluka o Siddapur. These societies do the marketin of the honey produced by the member besides providing them with expert assist ance in the matter of bee keeping an the supply of bee hives and othe requirements of the industry. Member are classified into those requiring th assistance of the experts to guide them in carrying on the industry and them who take care of their bees themselves The former have to bear the expenses incurred for the payment of salaries of the fieldmen appointed by the societies for the purpose. They contribute a fourth share of the gross yield of the honey obtained by them. The other class of Bee-Keepers do not pay anything as they take care of the bees themselves. Whenever

*The low production was due to untimely rains, cyclones, and other natural causes.

any Bee-keeper brings his honey for sale to the Societies, a payment of 3/4th of the price of the honey is made in cash. The remaining fourth part is utilised for the payment of the salaries of the fieldmen and the other members of the staff attached to the Societies. What remains after this expenditure is met, is returned to the members in the form of Bonus. What the members contribute for the expert assistance hardly suffices. A considerable portion of the margin between the purchasing and the selling prices of the honey goes to meet the deficit. This is because the Societies-particularly the one at Honawar-have always a programme of the expansion of the industry in the areas not yet tapped. It does not get any assistance from the Government or any other agency for any expenses in this connection. No Centre becomes self-supporting till after three years of the commencement of the industry there. Thus the Bee Keepers in the well established villages bear a portion of the expenditure for the spread of the industry in new areas. The following gives an idea of how the industry stands in the areas administered by other Societies.

1947-1948

Name of Society.	No. of Bee Keepers.	No. of Colonies.	Yield of honey.	No. of villages.
Karwar.	154	190	800	14
Ankola.	42	52	300	6
Kumta.	277	781	3509	37
Bhatkal.	123	257	387	14

In the taluka of Honawar where alone the industry has shown marked progress, it has been amply proved that a personal cultivator of lands can, without causing any inconvenience to his principal occupation attend to about 20 hives of bees. They would require but an hour of his day during the seasons when he would be required in the fields, and about 1½ hours to 2 hours in the season of honey flow which commences in November and lasts till the end of December, and commencing in March lasts till the end of May. Bee Keepers owning so many colonies have been able to get a crop of over 600 lbs. honey—about Rs. 700. An investment of about Rs. 150 for the purchase of hives, a honey extractor, and the other bee keeping appliances is all that is required. Members of Bee Keepers' Societies get the equipment on hire purchase system, the instalments commencing from the time they begin to get their crop of honey. It lasts for about five years. In the villages of the Kanara District, particularly on the coast line where one kind of tree or another is in blossoms the whole year round, no artificial feeding becomes necessary. As stated already, colonies in this region are known to yield as much as 50 lbs. of honey with but a little care. Even women, children and aged people—weaklings, can carry on the industry. The Bee keeper is not required to move out of his house for the purpose. The work occupies him during only such part of the day as he can spare for it. He is required to work in the open in the midst of natural surroundings. No costly buildings need be erected for the industry. The

RURAL INDIA

Vol. XII, No. 8] SEPTEMBER, 1949 [Whole No. 126

"Salvation of India lies in Cottages."

—*Mahatma Gandhi*

TWO YEARS OF INDEPENDENCE

ON the 15th of August India completed two years of Independence. As advised by the Congress Working Committee, the second anniversary of Independence was celebrated throughout the country and abroad with quiet dignity and austerity. It was an occasion of jubilation, stock-taking and giving direction to the country. A number of messages and appeals issued by prominent leaders lay-down broad-outlines of policy along which work of national consolidation and reconstruction should proceed in future.

Elsewhere in this issue, we are publishing a few of these messages for the benefit of our readers. They in a nutshell call our attention and demand cooperation in tackling some of the major problems facing the country at the end of second year of Independence. Broadly speaking, these problems may be classified into 4 catagories Viz:- (I) Moral rehabilitation (II) Food Production (III) Cooperation (IV) Decentralisation of power and responsibility to the villages.

Moral Rehabilitation

In the course of his appeal to the nation on the eve of the Independence Day, the Congress President, Dr. Pattabhi Sitaramayya, stressed the need of moral rehabilitation of the people and that of the Congressmen in particular to discharge heavy obligations brought to their shoulders by the Independence of the country. According to him the next 12 months will be a testing time for the Congress and the Congressmen if they should prove equal to the great responsibilities, which they have taken to discharge. Congress will rise or fall by the weight of its own actions in the course of the next 12 months, said the Congress President.

The Deputy Prime Minister, Sardar Patel, felt greatly distressed at the wrangling for power, loaves and fishes found among the Congressmen and contrasted the present deterioration in the standard of conduct of the people with that of the grand elevation witnessed in the glorious days when they fought freedom's battle under the inspiring leadership of Mahatma Gandhi.

It may be due to the after effects of the World War II or the chaotic conditions of political and economic forces operating in the world at the present, the fact remains that general conduct of the people was never so low in this country as it is found to-day. There are practically no distinguishing standards of public morality in the post-freedom Era. Gone are the days when India under the leadership of Mahatma Gandhi aspired for *moral* leadership of the world in the early twenties and thirties of this century, when thousands dedicated their lives to live and

spread the message of Truth and Non-violence propagated by their Master; tens of thousands left their all and embraced poverty and sufferings for life to free their country from foreign domination and hundreds of thousands sacrificed many precious things of life, courted imprisonment at the call of patriotism without any idea of return or reward. That was a glorious period of moral renaissance lived and witnessed by many of us and the enchanting memory of those days is the pride and solace of our life-time

Though, we have now attained political freedom for which generations of our people sacrificed their all, the glow of freedom and happiness is nowhere to be seen in our country to-day. On the contrary there is depression, frustration, distress and gloom writ large on the faces of the people. Any way, this is just the opposite of what the people had hoped to see on the attainment of political power and freedom. Of course, there may be other factors responsible for creating present acute conditions of scarcity, want and distress, but there is no positive justification for widespread corruption, black marketing, favouritism, nepotism and resultant indiscipline and inefficiency found in public life and administration. It is no wonder, with moral integrity and efficiency gone and corruption rampant in all departments of life, acute distress and discontent may be felt by the people. Love of power, loaves and fishes, as stated by Sardar Patel, have undermined public morality and created a sense of uncertainty and distrust in the public life of the country.

Moral integrity and a standard code of public conduct are the only guarantees of sound public life and happiness and contentment of the people. We had witnessed this phenomena with the appearance of Mahatma Gandhi on the Indian political scene, and there was an extra-ordinary elevation of human conduct which ultimately brought us to the attainment of freedom. The present moral anarchy unless checked in good time, of which there are no clear indications just yet, will in the near future lead to political, social and economic confusion and lend the whole country into chaos, bloodshed and worse.

There must be reason, of course, why despite the passing of resolutions by the Congress prescribing a higher code of conduct to the Congressmen and occasional appeals issued by national leaders for the improvement of public character there seems to be no noticeable improvement in the situation. Indications are not wanting to show that there is progressive and definite deterioration in public character as could be seen in the wranglings and factions between the Congressmen in Bengal, Madras, Bihar, East Punjab, Madhya Bharat and Rajasthan. In the face of factions and mutual recriminations going on between the people charged with the responsibilities of state administration, what hope of efficient administration, public weal and national consolidation be entertained in those conditions.

There is hardly any chance of improvement on the Moral Front till the leaders place a definite ideal before the people to strive for, give first priority to moral values in all their political and administrative dealings and prove by their own example that they wish to live and die for high moral standards as was shown by the Father of the Nation, whom we are proud to quote. Till then, passing of official resolutions and appeals for moral rehabilitation may hardly avail anything..

Food Production

The Government have already taken decision to make India Self-sufficient in food by the end of the year 1951, and have assigned first priority to it. Admittedly, Food is our major front. Referring to food, the Prime Minister made earnest appeal to the nation in the course of his message on the Second Anniversary of Freedom :

"There is the problem of food, the primary necessity of humanity. We have given this first priority and in the measure we succeed in this, we shall succeed in the larger economic domain. Each man and woman can help in the production of food in some way or other and in avoiding waste. Unless we are self-sufficient in regard to food, we remain dependent on others. Let us, therefore, each one of us, devote ourselves to the immediate work before us. Out of this work will come a larger measure of cooperation and that cooperation will result in the solution of many other problems".

Food problem is no easy problem to tackle. It has been with us for the last 6 years and more with hardly any improvement in the situation. Rather, the situation has progressively deteriorated. The problem in nutshell means increased production of 4½ million tons of food grains in the course of the next 2½ years.

As the organisational picture of the 'New Food Drive' in the Provinces, State Unions, Districts and Talukas is coming to light, we are afraid, there is not much difference or change between the old and the new set up of working machinery. For finances, we seem to depend on the possibility of loan from the World Bank. The non-official organisation contemplated to reach and guide the farmer in improved ways of food production is yet under the consideration of the Government. And the way things are moving both at the Centre, in the Provinces and State Unions does not appear to lend practical support to the statements being issued by the leaders that 'Food Drive' has been taken up on a War basis.

The Food Ministers' Conference held recently at Delhi did not breathe the air of confidence or of War Emergency. Two major, but food-deficit Provinces of Bombay and Madras have already given expression to their inability to be able to wipe off their shortage within the next two years. The three surplus Provinces of Assam, Orissa and C. P. are tiny Provinces with only very limited resources to make up the all-India deficit.

And, in the absence of Central and integrated planning and vigorous drive, dearth of funds and inadequate working machinery to reach down to the farmer in the villages one has reason to be apprehensive of the successful outcome of our 'New Food Drive', notwithstanding appeals of our leaders and propaganda launched by the Press.

Cooperation

An all-out 'National Drive' or big undertaking not only invokes but compels Cooperation.

We have a feeling, that the present fissiparous and disintegrating tendencies could effectively be checked and brought under control by giving people work and creative direction. 'Food Production' is undoubtedly a huge national enterprise which must harness national energy to creative and productive ends. All that is needed is strong and capable leadership to be able to impart vigour to the

great national undertaking. One could not have conceived the integration of the States in such a short time without Sardar Patel being at the helm of the State Ministry. Or India could not have attained international status and recognition without Pandit Nehru holding the office of the Foreign Affairs.

The measure of cooperation and success in a cause is determined by the statnre of the man who advocates it. If food production campaign has not attained success or failed to gather momentum in the country as it should have, the only conclusion is that it has not been handled by a man, who could have made it a success. The drawback of requisite type of leadership destined to succeed was there in the 'Food' campaign from the beginning and, we are afraid, it still persists.

Power to the Villages

Dr. Katju has particularly pleaded the cause of the villages. He wants the Government to give power and responsibility to the villages to manage their own affairs. The present conditions of scarcity and want in the country are but the reactions of chronic poverty and misery suffered by the villagers for ages past. Granting power and responsibility to the village communities mean watering down the roots which in due course of time will produce beneficial results in increased production and prosperity to the nation as a whole.

The Next 12 Months

While reviewing the first year of our freedom, we had characterised it as a year of drift without definite policy in the field of constructive nation-building and in giving direction to national energies. The Second year closes with growing discontent and a feeling of frustration and acute moral, financial and production crisis facing the country.

'Food Production' is the focussing point at the threshold of the third year of our Independence. The next 12 months would be a testing time for the Nation and we shall be judged by the measure of success attaining our efforts in the sphere of 'National Food Drive'.

NOTES

Food Commissioner's Statement

WE have read with interest the statement given by Shri R. K. Patil, India's Food Commissioner, to the Press Conference at Delhi, outlining the measures being adopted by the emergency organisation under him, to tackle the problem of 'Food Production' and to ensure self-sufficiency of food in the country by the end of the year 1951. He has, very rightly, laid particular emphasis on the creation of proper psychological atmosphere both in urban and rural areas and appealed to the patriotic sentiment of the educated classes in the cities to come forward and set an example of disinterested national service before their less favoured brethern, the productive masses, in rural areas. In the matter of making 'Food Production Drive' an unqualified success in a comparatively short period of two years, it is imperative that favourable psychological atmosphere conducive to an all-out nation 'Drive' be created and the attitude of depression and frustration, which seems to have overtaken the country just at the moment be removed in the interest of national recovery.

We are happy to note that after 6 years of make-belief 'Grow More Food Campaign', which rather than increasing food, increased food-deficit in the country, the Government of India is taking active steps to tackle the problem seriously. The appointment of 'Food Commissioners' with wide powers, both at the Centre and in Provinces and State Unions is a first welcome step in this direction. It now remains to be seen what effective steps the Government is taking to implement two other important recommendations of Lord Boyed-Orr (i. e) to bring about perfect coordination and cooperation between the Centre and Provinces and to create an effective link from the Centre down to the cultivator in the villages. The weakness and ineffectiveness of the Government machinery in these two vital respects in the past was mainly responsible for its failure in the campaign of 'Food Production'. And if it must succeed in the present effort these two links must be properly organised and integrated and made effective and responsive to the Centre to produce desired results.

It is very obvious that the statement of the Food Commissioner is to be studied with reference to these two conditions and to offer our comments where necessary on the same basis.

Regarding Provincial and Village Organisation, the Food Commissioner makes the following observation in the course of his statement :—

"There would be a sub-committee of the Cabinet in all provinces charged with the responsibility of successfully carrying out the "Grow More Food" campaign. It would consist of the Premier and the provincial Minister of Finance, Agriculture and Irrigation. Its chief executive officer would be the Director of Food Production, who would be in charge of increasing production, in the same manner as the Commissioner of Food was at the Centre.

"To instill in the mind of the cultivator the fact that the country was passing through a period of emergency in which he had to play a vital part, Government were considering a proposal for the creation of a non-official agency which would be charged with the task of directly approaching farmers."

The Chief Executive Officer in a Province or State Union would be the Director of Food Production. So far as our information goes these Directors of Food Production have yet to be appointed in most of the Provinces and State Unions. And the programme of intensive 'Food Drive' may be said to have begun only when these appointments are made. Let us hope, that the Provincial Governments will see their way to fill in these executive posts without any further delay. It is too early to say anything regarding Cooperation and Coordination of various other departments with the work of the Food Commissioner. All that can be said is that it has not been very fruitful and encouraging in the past.

The formation of non-official agency to guide and to educate the farmer in the villages in the improved ways of food production and to supply easy facilities to that end is yet under the consideration of the Government. How immense this organisation would be and how much time it will take to have it organised in the scattered and distant villages in all parts of the country is not easy to calculate. However, at this end also the organisation is yet under consideration and it must of necessity take a long time to start functioning. Whether a non-official agency will be competent enough to discharge the duties of this sort of village or farm organisation is altogether a different consideration. What we believe is that this sort of activity requires regular and systematic working and recording for which non-official agency due to its irregular and impermanent nature is hardly suitable.

Referring to Government's plan for increased Food Production, the Food Commissioner said:—

"Government plans to increase food grains production by nearly 4,500,000 tons by the end of 1951. Of this additional increase 3,610,000 tons are to be secured through intensive cultivation, 300,000 tons from the reclamation of weed-infested and new lands by means of tractors, 260,000 tons through tube-well irrigation and 230,000 tons by the diversion of the acreage under sugarcane to food grains.

"All the provinces have worked out their plans and under each scheme there is particular target of food production. If the intention of the plan is worked in its entirety, self-sufficiency can certainly be achieved. The Government of India's task was to see that these plans are worked out and any obstacle standing in the way can be removed.

"It is true that till now the provinces have not felt the responsibility in regard to food production as they should have but the provinces have given an assurance that they would implement the plan."

Accepting that the Provinces have worked out their plans in detail in conformity with the basic plan; the necessity of adequate funds and huge working machinery cannot be obviated. For financing agricultural projects, the Food Commissioner hopes that there are good chances of the World Bank granting loans to India.

Against the back ground of the Provinces in the matter of increasing food production in the past, as admitted by Shri Patil, it will be too much for the Centre to rely on the promises and assurances of the provinces however sincere and well-meant they may be. The Central Government and the Food Commissioner would be well advised to keep an ever watchful eye over the Provincial activities of food production and see to it that the plans are implemented under their direct supervision.

Inviting the Cooperation of all parties to fight the food shortage in the country, Shri Patil stated:—

"This is a programme in which all Indian parties and interests without the sacrifice of any of their political ideologies, can unite to ward off a common danger. The question is, 'Shall we, as a nation rise by each one of us doing his duty in this total war on the food front?' I have no doubt that the task, though difficult, can be successfully accomplished, if the right atmosphere is created.

"If the present food crisis is fought on a war basis, success is assured; for instead of hostility, Government has the willing support of the country."

We entirely agree with the Food Commissioner that the success of the job depends on fighting it on a war basis. All the same, it is certainly a super-human task taking into consideration the present mood and temper of the people and below-the-normal functioning capacity of the Government machinery.

CAN INDIA ATTAIN SELF-SUFFICIENCY IN FOOD BY 1951?

Since the Government of India have announced their decision to stop imports of food grains after the year 1951, public as well as practical workers and administrators have been exercising their minds whether the Government will be able to implement their decision and wipe out the 'Food-deficit' within the next 2½ years. Shri P. M. Khareghat, former Vice-Chairman of the Imperial Council of Agricultural Research and Secretary, Department of Agriculture, Government of India, has, in the course of a studied and thoughtful article contributed to the 'Times of India', tried to analyse and explain the possibilities of increasing food output both by intensive and extensive cultivation in the course of the next 2½ years and drawn his conclusion that India will not be self-sufficient in respect of all its food requirements by the end of 1951. Practical administrator that Shri Khareghat has been all his life, his views are entitled to our readers' consideration. Relevent extracts from his article read:—

"Ever since the Prime Minister announced that there would be no food imports into India after 1951, many people

have been wondering whether it will really be possible to achieve self-sufficiency by then. In discussing this matter, it is necessary to distinguish between food grains and other articles of food.

"There is an acute shortage of food grains (cereals and pulses) in India; and it is because the demand greatly exceeds the supply that prices are so high. But opinions differ as to the extent of the shortage. Statistics can be brought forward to prove any thesis that one is inclined to put up.

"The best estimate of the deficit that can be ventured is a minimum of 4 million tons a year. This is based on a production estimate of 46 million tons on an average, of which 40 million tons a year are available as food after allowing for seed, wastage etc., and a requirement of 44 million tons a year, for a population of 340 millions or 255 million adults, at 17 ounces (14 cereals and 3 pulses) per day per adult. In the light of this consideration, the immediate aim must be to increase the annual production of food grains by at least 4 million tons. This represents an increase of only ten percent on the present production. At first sight one is tempted to say that this should be easy of achievement. But can it be done in 2½ years and if so, how?

Reclamation Of Land

"It is true there are over 100 million acres of culturable waste and fallow lands in India. But this is marginal land and we have no information as to what measures are needed to bring it under cultivation. Moreover, we have not yet the necessary bullock power nor are an adequate number of tractors available for reclamation work. Even with 1,000 tractors, it will not be feasible to reclaim more than 1.2 million acres in 2 years; this would produce some 750,000 tons of foodgrains a year, provided all such land is double-cropped.

"It has sometimes been suggested that more land should be transferred from non-food to food crops. But there is an acute shortage of cotton, jute and oilseeds and their acreage needs to be increased, not decreased.

"Next, there is the question of increasing the outturn from the existing acreage. The provision of water for irrigation will help greatly in increasing production. The construction of dams and canals however is liable to take years. Tanks can be dug and wells constructed quickly in large numbers; but even if 100,000 wells are dug, they will only add some 250,000 tons to the annual food grain supply. Tube wells are a possibility in some areas; if prompt action is taken 3,000 such wells can be constructed in 2 years. Some 1.2 million acres can thus be irrigated, producing 750,000 tons of extra foodgrains a year. But what hope is there of speedy action when Government take seven months merely to print a report on the feasibility of constructing tube wells.

Improved Seeds

"The use of improved varieties of seed can increase production. But this also requires time and organisation. The seed has to be grown at the proper season, kept pure and multiplied year after year; an elaborate organisation has to be built up for securing and maintaining the purity of the seed.

"Manuring can certainly increase yields; but all the manure that can be made available will be needed for the new areas reclaimed or brought under irrigation. Moreover chemical fertilisers are not available in sufficient quantities while composting is not popular with farmers.

Procurement

"Emphasis has been laid in some quarters on procurement. But it must

be realised that what it really means is that the farmer has to give up part of his own food to feed the city dweller. In any case, procurement by itself cannot add to the food supply available in India. But the prevention of wastage, especially in storage, can make a certain amount of extra food available for human beings at the cost of rats and insects. The provision of improved storage accommodation on an adequate scale is, however, likely to take years.

"From this brief analysis, it appears that the annual production of food grains in India can only be increased by about 2 million tons by the end of 1951; the target of 4 million tons can, however, easily be secured by the end of 1953, provided an all-out effort is made. This conclusion, however, presupposes average conditions; if the monsoon is favourable, an increase not only of 4 but of 6 million tons can be secured in a year. Moreover, by allowing 16 ounces per adult per day instead of 17 ounces, it is possible to contend that self-sufficiency can be attained before the end of 1951.

Other Foods

"Turning briefly to other foods, the position in respect of vegetables is similar to that of potatoes. Production can be doubled in two years, if a market for such increased production is guaranteed at a remunerative price. The production of fruits on the other hand cannot be increased adequately in two years, though some increase in bananas and papayas is possible. It will also be impossible to attain self-sufficiency in milk even in 5 years, as the breeding of better milch cattle is a long-term process and depends ultimately on the provision of more food for them—which can hardly be made available in adequate quantities when human beings are starving.

"In short, India will not be self-sufficient in respect of all its food requirements by the end of 1951. Under favourable conditions, it may produce just enough vegetables and food grains to maintain the population at a minimum level of subsistence; but adequate production in these directions can be secured by the end of 1953. This increase will not be achieved merely by making speeches or by talking of all that the Government propose to do or by exhorting farmers to produce more. Such exhortations will only succeed, when Government co-operate with the farmers and supply them with the necessary facilities. I can only repeat what has been said over and over again that Government must arrange (1) to provide the necessary money, (2) to supply the requisite materials and (3) above all, to guarantee a remunerative price. This last is the crux of the whole question of increased production."

If natural factors, which greatly determine crop-production, favour the country during the next 2½ years, we may be lucky to wipe off our food-deficit. But taking normal view of the circumstances as they operate in the country to-day, not as they should be, many may be inclined to agree with the conclusion arrived at by Shri Khareghat. This should serve as an additional incentive to the Government to give top priority to the 'Food Production' and to put in all possible resources in men and money they are capable of, in making the 'Drive' an unqualified success.

LEADERS' MESSAGES ON THE SECOND ANNIVERSARY OF INDIA'S INDEPENDENCE

The occasion of rejoicings that the second anniversary of India's Independence was, it was also an occasion of stock-taking and giving future direction to national activities by the leaders of the country. As such most of the prominent leaders have issued their messages and appeals to the nation, a few of which we publish below, present major problems of the day for public consideration and co-operation. They, it is hoped, will receive earnest consideration to which they are entitled:-

(1) CONGRESS PRESIDENT Dr. PATTABHI'S MESSAGE

"Simultaneously with the problem of food, the problem of moral rehabilitation of the Congress must engage the attention of the whole nation during the next twelve months, and both must receive their finishing touches in the year after next.

"Let us hope, that within the twelve months of testing time before us, the Congress will finally decide its destiny-standing or falling on its own work.

"That we have accomplished so much and so quick may not, however, blind us to the vast measure of reconstruction still awaiting attention. Let us not in our pride of achievement forget the burden of our obligations to the country at large and the common man.

"The common man's prosperity spelt progress to the country, his contentment ensured peace in the land and his happiness was the guarantee of the nation's eminence.

"Such a complete blessing cannot be assured unless he is ensured two square meals a day if not three.



Dr. PATTABHI SITARAMAYYA

"His nakedness, his ignorance and his health loudly call for the high priority of attention at Government's hands.

"The food problem had been before the country since 1942. For six years Governments at the Centre and the provinces had been "crying themselves hoarse" over the seriousness of the food situation. The country's deficit was being made up by imports, which "not only meant the depletion of the dollar resources but degradation of the nation's self-respect.

"Food and clothing must be the primary concern of each citizen so that he and his family may grow the one and make the other.

"On the contrary people have been accustomed and encouraged to blaming the Government of the day saying that sufficient food has not been supplied.

Even a democratic or republican Government cannot manufacture food in a day, but the peasant and the worker can.

Extension Service Plan

"The people should stop the spirit of recrimination which was widely noticed and replace it by a spirit of co-operative endeavour. It was only then that one could think of national recovery.

"The application of the American extension service scheme in India was being examined by the Agriculture Ministry of the Government of India.

"The scheme was a cooperative effort of the U.S. Agriculture Department, State colleges and local Governments and was meant to place technical guidance and help at the disposal of individual farmers by direct personal contact.

"The primary duty of the Congress is to co-operate with Mr. R. K. Patil, the Commissioner for Food Production, and his department in every possible way in order to make food production an unqualified success.

Future of Congress

"Many people alarmingly refer to the doom of the Congress. It is just possible that its foibles float on the surface and become visible to all, while its good points, if any, remain unseen at the bottom.

"The Congress at any rate cannot continue to live on its past, drawing its reserves which are after all limited and are now getting more or less exhausted, but must continue to build up new assets as reserves through devotion and helpfulness to the masses so that they may serve not merely the needs of the present but also function as reserves for the future."

---

(2) MESSAGE FROM SHRI C. RAJAGOPALACHARI, GOVERNOR-GENERAL OF INDIA

"We are entering upon the third year of Independence. On behalf of you all, sisters and brothers, I first offer homage to Bapu. May his spirit ever watch over us.

"Government at the Centre and in the provinces and other public organisations engaged in national service are doing their best to cope with the problems, which are many and tough. There are not a few hurdles to be overcome even in the execution of policies over which people are in general agreement. These hurdles can be got over if people will recognise difficulties and make up their minds to co-operate wholeheartedly.

Food and Manure

"I have already expressed my concern and made my appeal about food and manure. It is our immediate and most important national programme.

"These verses are from our ancient scripture.

अन्नं ब्रह्मेति व्यजानात्
अन्नादेव खल्विमानि भूतानि जायन्ते ।
अन्नेन जातानि जीवन्ति
अन्नं प्रयन्त्यभिसंविशन्तीति ॥
अन्नं न निन्द्यात् तद्व्रतम् ।
अन्नं न परिचक्षीत तद्व्रतम् ।
अन्नं बहु कुर्वीत तद्व्रतम् ।
न केचन वसतौ प्रत्याचक्षीत तद्व्रतम् ॥

The lines mean:—Food is indeed Brahman. From food are born all beings in this world and by food do they live, and, after death, they become food again for other beings. We should not speak ill of food. We should not throw away food. We should produce plenty of food. Let no

one be turned away who comes hungry. This is most ancient wisdom and as valid now as in the old days.

"People do not realise how much more fortunate we are in our resources and in the conditions in which we live than many other people among the nations of the world. Our men and women are not less honest than men and women in other parts of the world. Nothing is gained by depression and by needless self-abasement. Confidence is the foundation of achievement. I want people who feel frustrated or nervous to put the following question to themselves: Do we improve matters by reducing the confidence of our nation and the credit of our State? If we hope to live and prosper, we should co-operate with one another and restore confidence and improve our credit abroad. If you believe and go about spreading the idea that your house is haunted, you cannot expect your house to fetch rent or sell it for a good price. You must throw open the shutters of your windows and live in your house and brighten it up. Then you will not hear strange noises and the ghosts will depart.

"Democracy obviously does not mean, every one for himself. The public weal should be kept in view. The size of our country and the size and quality of our population are such that democracy must break down unless we protect its authority with the same care and zeal as, in the old days, personal and authoritarian rule protected itself. Authority must rest somewhere and function effectively.

Opposition in Democracy

"Those in charge of our State are not totalitarian in any sense. It is true that they do not want subversive activities but never have they wished to suppress opinions. They welcome criticism as well as opposition which does not degenerate into a desire for creating chaos. This infant democracy cannot stand violence or chaos. It is not the fault of our Governments that they command such large majorities in all the legislatures as they do. Opposition wherever it exists is given the freest scope of expression. This is the essential difference between democracy and totalitarianism. But opposition cannot be artificially created in order to improve the dynamics of democracy. I say these things because I have seen arguments based on the notion that we are totalitarian and suppress opposition. This is fallacy arising out of the large majorities that the present Governments at the Centre and in the Provinces command. Some day patriotism will divide itself on smaller issues but we must wait for the natural evolution of this state of things. We gain nothing by precipitating such differences before time.

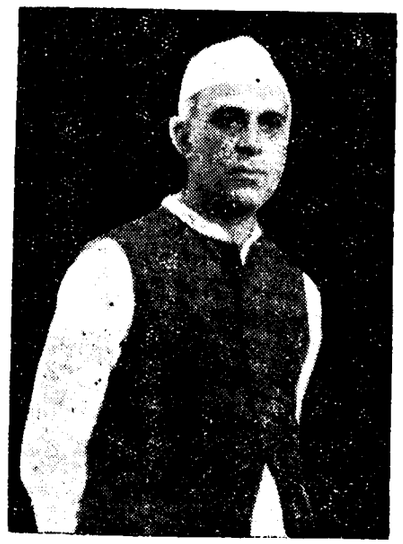
Need for Stability

"It is true that the essence of democratic constitution is the right and the opportunity to change the personnel that wields authority. But the exercise of this right must be to bring in an approved new policy and a set of people who have abiding faith in that policy and offer to work it; not just to give an even chance to everyone for fulfilment of personal ambition. All our attention must now be bent on stability. We need steady production, steady business, steady progress and stable administrations on which these rest.

"May the New Year be one in which we shall all put forth greater effort with confidence and mutual trust and with abiding faith in the destiny of our great country."

---

(3) MESSAGE FROM PANDIT JAWAHARLAL NEHRU



PANDIT JAWAHARLAL NEHRU

"We should prepare ourselves for the great work that lies in the coming year and it is by our work and our achievements that we shall be judged and not by the words we utter.

"In the course of this coming year, the Republic of India will come into existence and a new chapter in our country's life will begin. One period of transition will be over, another will begin.

"Slowly, but I hope surely, we are laying the foundations for the Indian Republic for which many of us had laboured throughout our lives.

"We have to devote ourselves therefore to work for the common weal, thinking always of the good of India as a whole and not of party or sect or province; thinking, above all, of the common people of India, who carry so many burdens and on whose welfare and contentment ultimately depends the future of India. Economic crisis have hit them hard, and more especially struck at the middle classes. That has been not our fate only but also that of a large part of the world.

"We have to remember, above all, that whatever economic or other policy we might follow, nothing worthwhile can emerge out of chaos. Therefore, everyone who has the good of India at heart must set himself against violence and disorder. Everyone also must realise that, as a free citizen of independent India, he has to shoulder to some extent the burden of work and responsibility. Governments, however good they might be, can only function in a limited sphere. A democratic Government requires even more the full co-operation and labour of the people in tackling any great problem.

Political Differences

"There are many differences among the various groups in India and there is a great deal of criticism and often of self-criticism. Criticism and self-criticism are always welcome, provided they do not take the place of work. Today, India demands work for her children.

"There is the Problem of food, the primary necessity of humanity. We have given this first priority and in the measure we succeed in this, we shall succeed in the larger economic domain. Each man and woman can help in the production of food in some way or other and in avoiding waste. Unless we are self-sufficient in regard to food, we remain dependent on others. Let us, therefore, each one of us, devote ourselves to the immediate work before us. Out of this work will come a larger measure of co-operation in a common effort and that co-operation will result in the solution of many other problems.

"If we hold fast to the anchor of our faith, all will be well with us. That means,

remembering always the message of the Father of the Nation, and the democratic ideals so eloquently expressed in the preamble of the new Constitution that is taking shape.

"On this day, which has a historic significance for us, let us think with all reverence of Mahatma Gandhi and his teachings and let us resolve to be worthy of him who led us to freedom.

Indians Abroad

"On this second anniversary of the coming of independence to India, I send my greeting to our fellow-countrymen abroad. During this past year we have many achievements to our credit and we have faced many dangerous situations. In many ways, we have not succeeded in what we attempted to do. In spite of crisis and difficulty we face the new year with courage and confidence and with full faith in the future of India.

"All our officers abroad will remember always that it is a high privilege as well as a great responsibility, to serve India at any time and, more especially, during this period of great change and transition. They have to keep the good name of India bright and untarnished and always to keep before them the ideals which have moved us in the past and which inspire us today. So far this coming year, we must dedicate ourselves anew to the service of India."

---

(4) MESSAGE FROM SARDAR PATEL

"On the second anniversary of India's Independence, being in the city of Bombay, my mind goes back to the year 1942 when we put the final seal on our resolution to make a last and determined effort to shed our bondage. I naturally recall the heavy sacrifices which we underwent for the cause of our freedom, the prolonged sufferings which many of our comrades and sympathisers bore cheerfully in expectation of the ultimate joy and glow of liberation, and the comradeship and fellow-feeling and unity and discipline which were the outstanding features of our struggle.

"Today, as I recline amidst fresh and vivid memories of those days, I naturally compare and contrast those expectations and those sufferings and sacrifices with the current scramble for loaves and fishes. Only one thought comes to my mind: 'Bapu, you should have been living at this hour, India has need of you'.

"May be, his living example and inspiring presence would have restored that balance and poise which we all exhibited under his magic spell, and the absence of which has cost us so much in the descent from the heights which we attained in those glorious days.

"No Room For Despair"

"Yet, if we reflect deeper on the problems that face us, whether they are country wide, local or organisational, I find no room for despair or despondency. It is somewhat natural that our minds should be concentrated on problems yet unsolved, on difficulties still unresolved and on obligations remaining undischarged. Such a one-sided approach is however, unfair both to ourselves and to the country for which we are all working with unmitigated zeal and all our resources in talent and experience.

"In addition, the partition of our country has administered severe shocks and caused considerable dislocation. It shook us to the very foundations and yet we could maintain our hold on the ground.

We have similarly faced many calamities and survived through many critical moments. This proves that if the nation's heart is sound, if our objectives are clear, and if our ideals have sound foundations, I see no reason why we should not emerge out of this period of transition, well-equipped to launch our ship on an even keel under a Republican India."

---

(5) MESSAGE FROM Dr. KATJU

"On this day, August 15, the second anniversary of our Independence, much will be said and written throughout India. There will be, I have no doubt, plenty of introspection, and the economic ills from which the country is suffering with the rest of the world will receive adequate consideration.

"I hope also that esteemed friends will point out the extreme impropriety and even danger of weighing freedom in scales, golden or otherwise, for the simple reason that a country's political freedom is not weighable or assessable in any form whatsoever. It stands by itself in solitary grandeur.

"It was said in the Vedas—something which to our national misfortune we seem to have forgotten all these centuries—that it was an act of impiety, an act contrary to Dharma, and sinful for an Aryan to live in a country ruled by aliens. This was put in absolute terms without qualification of any kind whatsoever.

Misleading Doctrines

"In these difficult days when, for many, life is becoming almost an intolerable burden, men's minds are likely to wander, and like a sick man in despair one becomes apt to take any quack who predicts a complete cure, even though some vital limbs may be lost in the process of cure. There is accordingly a great danger of being misled by doctrines and philosophies of life which hold out hopes of speedy economic recovery.

"The danger is that, overcome by such an attitude of mind, we may risk our political freedom. Given political freedom, the whole field of national life is open to examination, discussion and persuasion and adjustment, and the rule of the majority—no matter which particular policy may be in the ascendant—is entitled to respect.

"In the United Provinces, however, this second anniversary of Independence will also mark the activity in our villages. Parrot-like, we all repeat Gandhiji's dictum that India lives in its villages, and I fear that many of us, with our tongues in our cheeks, pay lip homage to the villager because he is a voter.

"Help The Villager"

"It is, however, almost fashionable to condemn him as an ignorant, illiterate, superstitious and obsolete individual. I have never shared this opinion. I have always held him, be he a farmer or a landless labourer or a village artisan, in the highest esteem. Both as a man and as a skilled worker, in his own sphere or activity, I consider him honest, truthful, large-hearted and altogether a very genuine human being.

"The vices we attribute to him, such as the so-called village factionalism and a readiness to lie in court or outside before persons wielding any kind of authority, are not his faults. They are due to his merciless exploitation by others.

"For the last 200 years, till Gandhiji came with his message of healing and sympathy and friendship, no one ever

went into a village, and met a villager without intending and attempting to make money out of him by all possible means, fair or foul.

Social Opinion

"The village community was in the true sense of the word, in spite of its caste hierarchy, a real republic, and public opinion in all matters appertaining to social and community welfare and in matters political and economic had full sway.

"Social opinion acts as a deterrent to perjury, and this social opinion made itself felt because trials were held by village tribunals on the spot in the presence of practically the entire village community. Unfortunately this safeguard was utterly destroyed by a centralised administration of justice, with the result that a modern court house is like an indoor ward in a hospital full of people suffering from moral depravities.

"I trust that with the advent of the "Panchayat Raj" in our rural areas a social revolution will soon begin.

"Is it not rather striking that while we are prepared to entrust the whole future of the country and vital questions of peace and war and high public policies to the vote of the villager and think that he will somehow or other be able to form a correct conclusion upon these matters of supreme importance, we feel great hesitation in entrusting him with the management of his own local affairs and in his capacity to settle his own petty disputes.

"Such an attitude of mind is quite inexplicable to me. I think wisdom lies in throwing the burden of managing their own affairs in the largest possible measure on the villagers themselves, not even on their elected representatives, the so-called "Panchayats" or the union boards, but on the villagers as a whole on their "Gram Sabhas", as they are called in the U. P. Panchayat Raj Act.

Repositories Of Power

"We shall be making a mistake if we treat the "Gram Panchayats" as the repositories of power. Power should lie in the "Gram Sabhas." "Panchayats" should be the executive committees to carry out policies formulated by the "Gram Sabhas" and every villager should be encouraged to take the most active and genuine interest in the administration of his village affairs.

"Personally I attach the greatest value to the system of administration of justice, both civil and criminal, by elected judicial "Panchayats".

---

(6) MESSAGE FROM SHRI JAIRAMDAS DOULATRAM

"August 15 is drawing nigh. For the masses of India the year which has passed has witnessed hardly any change in their condition. They had built high hopes when freedom was won but its glow has not yet reached them.

"It will serve little purpose to comment on the causes which have been responsible for this. We must make a fresh effort to make the people in distant villages feel that the country's new status is leading to a definite change in their economic and social conditions.

"Big development schemes are in preparation or execution which will water fresh lands and make electric power available in new areas. These will have their economic consequences on the life of the people round about them. The fruits of these schemes will, however, take some

time to ripen and their benefit will be local. Other schemes which will affect the life of the people are also going through the process of preparation and implementation. But they are all bits of a big whole, each will mature in its own time and place. Their execution depends upon factors which operate very slowly.

"One would wish the masses in the villages to do something themselves, which would make for change in their economic condition. By their own effort they may celebrate August 15 in a form which improves their present lot. Government will celebrate August 15 in its own way. So will the urban population. It is open to village folk themselves to organise a big programme of action.

Production Programme

"I would not indicate all the items they could include. Being in some way responsible for advisory functions in regard to agriculture, I can speak to the agricultural masses only about items for the celebration of Freedom Day, which are linked with agriculture. I wish it were possible to organise all the agricultural producers of the country in a vast drive for launching a programme of production, which is both within their means and also rich in immediate results. The seasonal factor probably comes in the way of many items of work being taken up uniformly all over the country in the middle of August. But one item has been suggested to me which, it appears, is well-timed for the middle of August and is of a nature, which permits its being implemented in every village in the country. I wish to put it before all who have influence over the agricultural population in rural areas.

Organic Manure

"Experts have told us how in India agriculturists waste large quantities of organic manure the use of which can produce enough food to cover the entire national food deficit and leave a surplus. This traditional habit of wasting farm-yard gatherings and other sources of organic manure is forced on the people, because they have no other sources of fuel they need in their daily life. A solution of this difficulty has been found in what are called quick-growing trees, which, while lending a pleasant appearance to village surroundings, the field bunds, the roadsides, and the railway line, will supply to the neighbouring village population a handy substitute for fuel, in place of the fertilising cow-dung and other farm manure which our soil is hungering for. We will have done double service to the country by following such a programme. It can become a factor for more production. The individual who thus saves organic manure for his field is a gainer, because he reaps a richer harvest and so does the country, because of the total increase in food crop.

"I would, therefore, appeal to all who are in authority in the Province and States to take immediate steps to organise a systematic programme of planting quick-growing trees suited to local conditions during the week beginning with August 15. It is a simple programme. It has no relation to town life. It would make little appeal to the urban mind. But it fits in with rural conditions. It touches the life of villagers. It affects the yield from their farm. It affects, therefore, national production. But the task is a huge one, covering as it does lakhs of our villages and can successfully be accomplished only by the active co-operation of the villagers themselves. Village officials, village school masters and college students can play a special role in this matter by arranging local programmes and giving a lead to local people in the campaign of planting quick-growing trees, in organising manure collection to enrich our fields, thereby helping the country in its plans for greater food production."

VILLAGE SERVICE*

By: **Kailasnath Katju**

Dr. Katju, though a Governor of a Province is essentially a Village worker in the true sense of the word. As a Minister in his home Province of U. P. he has to his credit establishment of numerous Panchayatghars in that Province and introduction of many-fold reforms in the life of the villages. His advice therefore, though tendered on a different occasion has a wider appeal to the intellectual classes of the country to go and live in the villages and enrich the life of the villagers by actually living with them.

The advice, coming as it does from a distinguished village worker to his fellow countrymen has a significance all its own at this particular juncture when the country has taken a decision to be self-supporting in its 'Food' requirements in the next two years and country-wide 'Food Drive' is in the process of being launched by the Government.—*Editor*.

A 'village' in the popular mind is associated with small habitations in the rural areas. In India we have lakhs of villages. The population of these villages live generally in huts and they are mostly dependent upon agriculture both as a means of livelihood and as a way of life. There may be in the villages some small cottage industries generally allied to agriculture, but agriculture is the main occupation. These villages, generally speaking, lack all amenities. There are no medical facilities nor good communications and very few villages contain schools either. It is these villages which Gandhiji had chiefly in mind and it was their welfare which he had so much at heart. The great Kasturba National Trust founded by him for the welfare of the women and children of India living in villages is expressly limited to villages whose population does not exceed 2,000. It is in these villages that old and harmful social customs and superstitions prevail and where people are still so steeped in ignorance that the need for beneficent work is the greatest.

Townships or small towns with a population of 5,000 to 10,000 or even 15,000 should not definitely be regarded as villages. They have large numbers, if not hundreds, of pucca houses. They possess hospitals and dispensaries and high schools, if not Intermediate Colleges. There are plenty of shops and the residents carry on different occupations and do not depend wholly or even partially on agriculture. As compared to Calcutta and even because of proximity to Calcutta they may be stagnant pools but they are not villages. Most of them are centres of unions and some of them are small municipalities. Many residents of those places which are near to Calcutta or Howrah come over to the city daily as office workers or otherwise. To call these places villages will be a misnomer and to make such villages centres of village uplift activities will again, in my opinion, be a wrong procedure.

I suggest that my fellow Rotarians, if they are interested in the rural welfare movement, should definitely select one or more real, genuine villages for their good activities.

Then there is another experience which I should like to share with my fellow Rotarians. I have found that in

*From a note addressed to the Rotary Clubs of Calcutta and Howrah.

this social welfare work it is not money that counts. It is the personal endeavour and personal identification with those whom you want to benefit that count. You may succeed in improving the villagers permanently, if you go and live among them, by your personal example and by your precept. But if you merely spend your money on them by establishing, let us say, a primary school or a social welfare centre, then it is really working, so to say, on sand. While the institution is there, villagers will take advantage of it, but as soon as it ceases to function, they will relapse into their ignorance and there will be no signs of improvement visible. This aspect of the problem influenced Gandhiji and he stressed the establishment of *ashrams* where wholetime workers might go and live among the villagers and share their daily life and inculcate in them habits of self-help.

Then again it is not sufficient that the residents of an *ashram* or a social welfare centre should themselves do some work for the benefit of the villagers, such as improving village sanitation, etc. What is necessary is that the villagers should themselves be made improvement-minded. Young men and women should be organized and should be taught and helped to work for themselves. The workers should go and with the help and active cooperation of the villagers themselves sow the seed of improvement so that in a few years the seed might grow into a good, healthy tree and continue to flourish on its own without extraneous help. I quite recognize that to ask a city man to go and live in a village may be a counsel of perfection. Very few people would be able to do so and such demand might be an idle one. But what cannot be done individually is perfectly feasible for a group of persons acting collectively. I would, therefore, suggest that a number of Rotarians interested in village welfare work should join to-gether and establish a home of their own in one or more selected villages. That house should be permanently occupied and it should be made to appear as if another family had come to reside in the village. As many Rotarians or members of any particular group may go and live there day and night as they conveniently can, but there must be in residence throughout the year at least one member in rotation. Supposing a group consists of 14 people, then they might among themselves settle the rota and one of them should go and pass at least one day and night every fortnight in this community centre in the village... it should be just like another home in the village and in no way very grand or out of keeping with the normal village home. It should be a model of cleanliness and good sanitation and hygiene. It should have a small yard with a well for drinking water and some flowers so that the villagers might come and enjoy the company of the Rotarian family. The inmates should treat themselves just as one family in the village and take part in all the village festivals and all village activities and share the villagers' joys and sorrows. A medicine chest might be kept and household medicines distributed. The villagers should be organised for their own improvement...While advice should be available, the initiative in the field work should be theirs. There are immense possibilities in this procedure. There may be a regular village cleaning drive from time to time. A vocational centre might be established, a good primary school opened and cottage industries encouraged and developed.

Care, however, must be taken that the life that the inmates live should be just like the clean life of an ordinary villager. Food should be simple and by no means luxurious, nor should be so the apartments and the furniture in the house. There should be no air of patronage. Villagers should be made to feel that people who have come to live amongst them have come not in a patronizing mood to do good to them but really to ennoble themselves and enrich their own life by living among simple, truthful village folk. This is not merely conventional language. My experience has been that I learn and profit much more from visiting a village than any benefit that I may confer on the villagers themselves by my going there.

Work undertaken on these lines is bound to have far-reaching results. The home established will become a model for all other homes in the village and the villagers will learn how to improve themselves. Money will definitely be required, but...this money should not be wasted, and it should be coupled with personal effort and personal example so that it may yield maximum results.

OUR FOOD PROBLEM

By : **B. M. Pugh**

THE production of food, sufficient for our needs, has become one of the greatest problems which this country has to face. And there are many people, experts among them, who believe that this country will never be able to solve this problem satisfactorily, that is, to the extent that everybody in the country will have sufficient to eat. They tell us that with the increase of food, human procreation will also continue at an increasing rate and that the great mass will forever remain near the edge of starvation. I believe however, that procreation to the uttermost limits of the available food supply is itself the result of poverty and hunger. Paradoxical as it may seem, abundance seems to put a limit to procreation by the rise in the standard of living. Believing therefore that the production of more food will make this country free from hunger and starvation, I make the following observations on some of the most important aspects of the food production policy of our country.

Economic Planning of the Land

Land being the primary food-producing resource must be used fully for the production of food. In the first place, there should be no waste land anywhere in the country. This means that the first step for the fullest use of the land is to make an inventory of all waste lands so that they may be brought atonce under cultivation. The term "waste lands" or "cultivable wastes", is certainly a misnomer in any civilized country. Those lands should be developed and exploited for the benefit of the starving millions. It is here that tractors and tractor implements can quickly come to our rescue as they make the development and exploitation of these lands possible at the shortest possible period.

Secondly, the proper utilization of all agricultural lands for the maximum production of food and clothing is a matter of concern of all civilized

Governments. There are certain lands which even from the agricultural stand-point should be left to forests. These will supply humus and also a more constant source of water to agricultural lands that are situated at the lower levels than these forests. There are again some lands that may be used more effectively for the production of one crop in preference to another. Some lands will be more productive if certain types of fertilizers are applied to them. There are also lands which are now not productive and which can be made so by using known methods of reclamation. All these and many other related problems can be studied, and the knowledge utilised for the production of more food. A land utilisation bureau which possesses the services of a forester, an engineer, an economist, a chemist and an agronomist will be a very suitable one for advising the country on the proper utilisation of lands. Such a bureau may also take up the intricate problem of land tenure and advise Government on the modification of the system where necessary. It may also take up the proper utilisation of grazing lands or grazing reserves by the growing of suitable fodder crops for animals.

Compost Making

The need for humus of Indian soils is almost universal. There are, to be sure, soils which are rich in humus such as those which have been cleared of the virgin forests or soils below the thick tropical forests of the submontane tracts, but such soils are not common in this country. The supply of humus to the soil is therefore one very important consideration in our national food policy, as humus supplies not only the necessary plant elements which are essential for plant growth, but also the important soil constituents which physically, chemically and biologically add to the increased production of food. Compost making has therefore been advocated all over India. Farm composts and municipal composts are well-known to increase food production materially. But farmers and municipalities have been slow in adopting the methods advocated. While it is true that most farmers have not been taught or demonstrated the value of compost yet it seems that a simple method of farm composting which a farmer can adopt without requiring too much labour has not yet been evolved. It may be pointed out here that the method of composting for one climatic region may not be necessarily suitable for another region. This fact is probably recognised by those who advocate two kinds of compost, dry season and rainy season composts.

Believing that compost-making is an important line to pursue both by farmers and by municipalities, I would urge that the methods which are believed to be suitable for adoption be as widely communicated to the farmers and municipalities throughout the country.

Irrigation

For the best utilisation of the land it is also necessary where needed to provide with artificial irrigation. There are many areas in India in which it is only possible to grow only one crop a year without irrigation, and a poor crop at that. But those areas when provided with irrigation are capable of producing two or three crops a year. Even in Assam where the amount of rainfall is more abundant than in many parts of India, a second crop of rice known as boro can be grown in those rice lands

where irrigation is provided for the crop. The country as a whole is aware of this fact, and for this reason irrigation schemes of all sorts are being carried out whenever the advantage appears to be immediate. But even this very commendable measure is not altogether without hazards. The increase of alkali or *usar* lands in semi-arid parts of this country, such as the United Provinces, Western Bihar, the Punjab and even in the Bombay Presidency has been due to some extent to irrigation. Some civilization in the Middle East, we are told, disappeared because of the misuse of irrigation water. This therefore should serve as a warning to us in this country.

Soil Conservation

In the past, this country has paid scant attention to this problem. Many of the so-called "waste lands" in this country are the result of this lack of attention to this problem. With the coming of the new era of independence has come also the urgency for growing sufficient food for every one in the country. This has resulted in the more rapid exploitation of the land. Some forest areas have been cleared and grazing reserves are being extensively and intensively exploited. These measures, we are sure, are commendable, and yet are fraught with danger. Rapid exploitation of our land resources has also been made possible by the more extensive use of machinery But this age of mechanization, unless it pays attention to soil conservation, may yet make this generation the most destructive in the history of our nation. In the most backward tracts of this country such as in the Apa Tani area of the Abor Hills in Assam or in the Angami country of the Naga Hills, also in Assam, where the people of the areas have for centuries been using soil conservation methods, the yields of their crops compare very favourably with that obtained in the most advanced countries of the world, and therefore very much exceed the yields obtained in other parts of India. A Zoologist of the Harvard University (U.S.A.) the other day, before leaving the shores of this country made a statement deploring the policy followed in some areas where rapid deforestation is going on. He further pointed out that the Kosi dam, one of the greatest irrigation projects in this country, may fail as the result of this policy of deforestation and the lack of a definite policy of soil conservation.

Crop Protection

The protection of crops (and animals) from pests and diseases is another method pursued by Government in order to increase our food supply. While methods of protection from all kinds of disease and pests have not yet been evolved, yet there is at present sufficient data to show that certain diseases and pests can be controlled and some of them economically. Such methods as can be used by the farmer should be standardised and popularised by propaganda or extension methods. Certain methods of protection can only be done by Governments, such as quarantine methods, breeding resistant types or biological methods of control. Government are now very much alive to these problems and are, I believe, doing all they can to minimise loss of food in this direction.

Food Utilisation

Another method that will be very conducive to the increase of food in this country is food utilisation. This country abounds in food of all kinds which have not been properly utilised. Our food is

not varied enough so that it can guarantee freedom of starvation even if one kind of food is lacking. Very many years ago many Irish people died of starvation because there was not sufficient potato in their country at that time on account of the visit of a blight disease on their potato crop. The food habits of the people in India, even amongst those who can afford to vary their food, are such that famines are the result either of the insufficiency of rice or of wheat. An Irishman will not die in the rice areas for he can live on his potato or sweet potato which can grow luxuriantly in those areas nor in the wheat area as he can have his potato there also. A little change in the food habits will go a long way in the solution of the food problem in this country and in improving the health of the nation. I am therefore of the opinion that the Home Economics or Domestic Science Courses (for girls) which have been started in many universities in India will help bring about progress in this direction. Nutrition and food technology (including fruit technology) should have important places in our studies in colleges and universities.

Improved Crops

The growing of improved varieties of crops is a policy that has been advocated for many years by Government. While Government have been successful in persuading some farmers or cultivators to take up these improved crops yet it does not seem that the growing of these improved crops has been as wide-spread as could be expected. The reasons usually given for the slowness of the farmer to take up these new varieties is said to be his ignorance or conservatism or both, yet it may also be true that in many cases the "improved varieties have not been produced". It is therefore very important that both Government and the farmers agree as to what an improved variety of crop is for any locality or region. Plant breeders or economic botanists must therefore first get the farmers' view point about an improved variety before one is recommended. Usually when improved varieties have been found acceptable to the farmers their spread have been very phenomenal, such as in the case of the Coimbatore varieties of sugar cane which is a good enough evidence that the farmer is not conservative or as ignorant as we always assume him to be. Sometimes even when a variety has been found acceptable to the farmer, such as the Co. 213 cane in the Bihar area, his later experiences have proved it to be unacceptable. Sometimes, however, the spread of an improved variety has also been held back by the inadequacy of the seed supply.

Rapid Movement of Food

This is another method by which famines in any part of this country can be prevented. Nobody need die if food in one part of the country can be moved rapidly to those parts where it is lacking. Good roads, quicker methods of transportation and such like means will always alleviate suffering and hunger, and guarantee any one in any part of the Indian Union freedom from starvation.

Manures and Fertilizers

Compost making as the method of conserving manure has already been dealt with in a separate paragraph in this article. But besides farm manure and night soil there are other manures available which should also be conserved and utilized for crop growth or the production of food. Such are horse

manure, goat manure, poultry manure, etc. These contain valuable constituents for the plants.

But besides these classes of manures there are plant manures which have not been properly exploited. These include Kudzu vine which only grows wild in certain parts of our country but which in America is utilised for manurial purposes and for soil protection.

Then there are oil-cakes which should become more universal in their application as manure to the soil if they are not suitable for human or animal consumption. Groundnut cake in Madras, Castor cake in Bihar and the U. P., Mustard cake in Bengal and Assam, and many other oilseed cakes must not be lost to the soil as they contain valuable plant nutrients.

But chemical or artificial fertilizers though usually richer in fertilizing constituents than the above are not always safe to use. To advocate their use without expert opinion may not lead to ultimate benefit for the country. These manures must therefore be used judiciously and preferably with expert advice.

Foods of Animal Origin

Human food may also be supplemented by raising such animals as can be eaten such as chicken, ducks, rabbits, goats, etc., or by animal products such as eggs, milk, butter, ghee, etc. But animal products are always more expensive than plant foods. This is clearly evidenced by the fact that people in those areas of the world where the density of population is the greatest use the least amount of foods of animal origin. "This is", to quote F. B. Morrison, Professor of Animal Husbandry and Animal Nutrition, Cornell University (U. S. A.), "because there is a large loss of heat or energy value, measured in calories, in the conversion into animal products, of grain or other feeds eaten by animals". The production of foods of animal origin should therefore not have preference to the production of foods of plant origin where there is a large starving population. The production of foods of animal origin may be justifiable only when such foods are produced in places or areas where there is no direct competition with the production of food crops, or when such foods are known to supply certain deficiences in the human diet.

As milk is a very important animal product it is very necessary that the production of this food (or any food of animal origin) be as economically produced so that it does not interfere with the production of other foods required by a starving population. In order to satisfy these conditions to some extent, it is very important that the milch cows be high-yielding, that is, that they convert much of the food that they consume into that important constituent of the human diet, milk. In the second place it is very important that the land resources used for the production of food for these milch animals be very productive so that only as small an area as possible is devoted to the production of animal feeds. This therefore means the proper development of our grazing areas throughout the country.

Capital and Labour

So far I have dealt only with land as the factor of production of food. But capital and labour as factors of production are as important as our land resources. Capital is needed to make more efficient tools available to the farmer. It is also needed for the purchase of seeds, manures and fertilizers, for the reclamation of

waste lands, for terracing hill-sides, for building proper storage for food grains etc. Measures should therefore be undertaken to make all these possible. If only the primitive cultivators in the Hill areas of this country had had all the hoes they needed for terracing their Hill sections, permanent cultivation in place of shifting cultivation would have been the method of producing food crops there and much of the disaster caused by floods in the plains of India would have been averted.

Labour or man resources are also essential factors in food production. But the problem in this country does not appear to be "more labour" but perhap "less but a more efficient labour." The food in this country can be produced in greater abundance by fewer hands. Rural education in the truest sense of the term would do a great deal to bring an all round improvement in the conditions of the village. It will not only make our man resources in the country-side more efficient, but also raise his standard of living physically, mentally and morally.

THE MILITARY AND FOOD SHORTAGE

By: J. C. Kumarappa

SINCE the attainment of independence there appears to be a definite tendency towards increasing armed forces. The recruits to the army are drawn mostly from rural setting. They have frequently been drawn from peasant stock. While at home these young men have been brought up on a frugal diet, may be one meal a day. This starvation level, in itself, has often driven them into the forces where they are given two 'nastas' and two square meals per day in addition to being introduced to such habits as smoking and perhaps even drinking. In the usual parlance this may be called "raising the standard of living." Such raised standard is maintained at the cost of the public and it also means a greater draft on the existing stock of food grains. Therefore, the mere increase in the forces would mean a shortage of food, as the consumption increases.

On the other hand, these recruits, while they were on the farm, would have been producers and in so far as they have run away from production it is a strain on our food supply. Thus we see increasing the armed forces means decrease in the productive forces and a strain on the existing supplies.

Rich countries have been able to maintain large armies by drawing on the supply of other countries even to the danger of starvation and famine in the supply countries, but India is not in a position to command such resources. Hence she has to pay through the nose for imports of food-stuff to make up the shortage caused by increase in armed forces.

Thus armed forces are largely parasitic in relation to food. If we wish to check this to any extent it will be necessary to draft in their man power into our food production. A good deal of the energy and time of the military forces are non-productive, if not destructive. Their energies during peace time could well be channeled into production of food though it may not be possible to completely make

up the shortage caused by armed forces such an effort will at least ameliorate the evil.

During the foreign rule the officers preferred to stay in big cities in specially constructed cantonments. Now there is no reason why such sites should be occupied. Army units may well be stationed away from the civil population, in cultivable waste-lands and with the enormous resources and engineering skill at their disposal they could be made to bring in cultivable waste under the plough. It may be possible for them to grow most of their requirements by way of food grains and vegetables.

This method of occupying the armed forces during certain seasons of the year has many advantages. It relieves the housing problem, as the houses in cantonments will be available to the civil population. It will enable the young men in the army to be trained in up-to-date agricultural practices, as the military forces can be properly staffed and the young men in the army, who are probably potential farmers, will be made manure-minded and better-seed-minded. These two defects in our conservative farmers will be corrected. Above all, a certain amount of the food shortage could be made up. Perhaps, if justification were possible, some part of the increase in military expenses could even be justified if these forces take up production without making an undue inroads on the existing stock of food materials. We hope, therefore, that the military authorities will be agreeable to such an agricultural spare time occupation being given to their men and in co-operation with the Agricultural Department be able to some extent defend the country against its great enemy, starvation.

GROW MORE FOOD OR PERISH

By: Mira Behn

AGAIN the "Grow More Food" question has been brought to the very front, and top most leaders are giving forth a clarion call to the Nation.

This time we must see to it that we succeed, otherwise we shall be doomed, and lose our fair name amongst the nations of the world. Not only our fair name but before long our very existence as a free and individual country will disappear if we cannot pull ourselves together.

Let us see why we have not succeeded upto now, and out of past experience learn what and what not to do this time.

The facts are hard, and are not pleasant to see in cold print, but, when the enemy is at the door, it is no time for mincing matters.

Why We Failed

Facing the question fairly and squarely, I would put down the following as the main reasons for our failure upto now:—

1. Lack of fully co-ordinated, practical, and realistic planning; especially Government's pre-occupation with big schemes at the cost of small ones which would immediately and directly benefit the kisan in the field.

2. Corruption and inefficiency of Government administrative staff.

3. Round-about "pigeon hole" procedure in Government departments.

4. Lack of living contact with the kisan, both on the part of Government and the educated public, resulting in general lack of enthusiasm on both sides for the "Grow More Food" campaign.

5. Growing corruption and indifference to anything but personal gain amongst the people.

Consult Kisans

The constructive suggestions regarding these points which come to my mind are as follows:—

Point 1: In the long run it is the kisan himself who knows where the shoe pinches and it is also the kisan who knows from life long daily experience what to do and how to do it. He undoubtedly can be benefited by guidance and advice, but one of his chief needs is to have his day-to-day difficulties relieved. I would suggest that a selection of kisans, from various parts of the country, who work with their own hands (not small zamindars) should be called together and in consultation with them, the experts should draw up realistic and practical schemes. We have to grow more food immediately. Big projects will avail us nothing in this particular direction.

Point 2: Government should raise the pay of the lower grade staff and, as the cost of paying their officials is already tremendously heavy, and cannot well be increased, it becomes essential that the highly paid officers should receive less, in order that the poorly paid staff may be raised to a point where they can make two ends reasonably meet without resorting to dishonest methods.

Stronger action should be taken by Government in all cases where corruption and inefficiency or slackness are reported amongst Government officials. At the same time a corps of public workers should be formed to work side by side with the Government staff in the development departments; for example, every Agriculture Supervisor in charge of a Seed Store should have with him a public worker to help in the propaganda and check any undesirable dealings. The corps of public workers should invite intelligent and experienced kisans as advisers.

Government should publish pamphlets and booklets for the benefit of their own officials and the public in general, describing the horrible state the country has got into, and the absolute need for us all to reform. At the same time descriptions can be given of discipline and honesty in other countries where things run better. And examples can be shown from history of the fate of the countries and empires which lost their moral bearings as we have at present. In this respect the public press can give great help. I would also earnestly suggest to newspaper editors that they should open their columns to descriptions of bribery and corruption experienced by their readers in daily life.

Cut Red-Tape

Point 3: No doubt the Food Controller has been given very wide powers, and it must be hoped that they will be sufficient ruthlessly to cut through the red-tape which paralyses all development work today. For instance, bricks and cement for masonry wells, oil for tube-wells, trucks and petrol for transport of manure, iron and steel materials such as piping, barbed wire etc., need such a terrific effort to be obtained that people often give up in despair. And if they do at last procure their requirements, it is as likely as not to be too late in the season. Even in Government schemes it is the same desperate struggle with red-tape and pigeon-holes.

Point 4: I believe the root cause of this state of affairs to be the snobbish kind of education imparted by our schools and colleges, which makes the student, for the rest of his life, think himself superior to the man who guides the plough. This outlook cannot be changed easily. For immediate effect, broadcast propaganda can be carried on through the press, cinema and radio which will make some superficial difference. But for deeper influence on the character, a rule could be made, that, from the high schools and colleges no student will be accepted for examinations who has not been through a definite period of field work, and passed the necessary tests; say six months' field work for high school students and one year's field work for college students. If the scheme is well drawn up and carried out in the right spirit, it can undoubtedly have wonderful results.

"Fight Evil Within"

Point 5: For this, Government should themselves launch a nationwide campaign, in which they should seek the help of all national workers and the public in general. Every available means should be used for awakening the people to a sense of the shameful degradation into which we have fallen, and the inevitable doom which awaits us, unless we rouse ourselves and fight the evil within. The public press can, of course, help enormously. The cinema and radio should go all out in this campaign. The best authors, dramatists and singers should volunteer their services and fill the cinema and radio with rousing and uplifting drama and music. At the same time, through these channels the public should be led to realise that they have got to play their part in the campaign. Mere criticism is of no avail. Corruption would be impossible if the public refuse to bribe. We are all one, and must swim or sink together.

—"*The Sunday News of India*".

A PLAN FOR THE DEVELOPMENT OF COTTAGE INDUSTRIES

By: V. P. Sharma

BEFORE discussing a plan for the development of cottage industries there should be discussed the defects inherent in the present day economy of the cottage industries. These are:—

1. The cottage industrialists are labouring hard for their survival under the clutches of the money-lenders and the middlemen. Efforts should be made so that the artisans may develop the habit of self-help. Cooperative Societies should be organised for the benefit of these workers. They will supply them the required raw materials, arrange for cheap credit and look into the marketing of finished products.

2. The small cottage worker is being thrown out of employment on account of large scale concerns. In order to recover his old lost position in the rural economy the artisan should make improvements in his production and have it organised on a cooperative basis.[1]

1. 'U. P. Information', March 1946, P. 28.

3. The cottage workers are mostly illiterate and conservative.

4. The prosperity of the cottage industries depends to a larger extent upon state aid. The recent war bears testimony to this statement. With a meagre encouragement given by the Government, the cottage industrialists supplied goods valued at Rs. 5 crores, on the theatres of war in 1941-42. It is estimated that war supplies gave employment to about 50,000 cottage workers in the Province.

The above defects can be remedied by means of a sound planning of these industries.

Cottage industries occupy an important position in the national economy of the country. Cottage workers have to face many problems concerning the development of their industries, which are required to be tackled by the state only. As regards production of cottage goods the Government should extend her hand of help in the following directions.

1. A survey should be taken up for making up tracts most suitable for a particular cottage industry. The main consideration should be of the nearness to the market, availability of cheap raw material and the required type of labour for the industry.

2. *Technical Help* (a) *Technical Education* — The state should provide the cottage industrialists with required technical education. It will be better if all the provinces of the Indian Dominion follow the example of pre-partitioned Punjab, where peripatetic demonstration parties of the Industries Department went on touring the various districts of the Province. These parties imparted training in the refining of oil, cloth printing, manufacture of castor oil, film industries, weaving, spinning, carding, glue-making, rope making, pottery, dyeing and gur manufacture."

(b) *Research on the Problems*: State should assume the sole responsibility of undertaking the research on the various problems of cottage industries, because the cottage workers are too poor to afford for it. The provincial departments of Industries should undertake research in the improvement of the methods of production and implements and tools used by the workers. The state should in this way help the decaying cottage industries of the country, so that they may adjust themselves to the modern environments.

(c) Development and diffusion of new research work relating to fascinating designs and patterns.

3. An intensive research and study is required to investigate the extent to which the manufacturing industries can be adopted to cottage industries. Japan has followed this programme very exhaustively. The result is that more than 75% of her exports are manufactured by the cottage workers.

4. Credit facilities should be provided by the Government. This problem can be tackled by the Government in the following two ways:—

(1) By establishing cooperative industrial banks, or

(2) Direct loans.

These facilities are needed for

(a) Purchasing raw material

(b) Capital required during production of articles.

(c) Temporary financial relief between the time of production and disposal of the finished products.

5. Arrangement for the supply of improved tools.

6. Cooperative credit societies should be organised for purchasing raw material, marketing the cottage products and credit provision.

7. Cheap development of hydro-electricity should also be undertaken.

The state can also help the artisans in marketing their products in the following ways:—

1. Information booklets should be issued so that the public may be aware about the various cottage industries in the province and the places of their production. Press also should issue notes concerning these items.
2. Cooperative depots and licensed warehouses should be established for selling and storing the products of the cottage industries.
3. The artisans should be given instructions regarding the market for their products and demand of their customers. There should be attempts by the Government for developing the market for the cottage products. Propaganda and advertisement should be done in order to create a taste for the cottage products among the general public.
4. Concessions in railway rates should be granted for transportation of raw materials and finished cottage products.
5. Transport facilities should be developed in the rural areas.
6. Grading and standardisation should be followed in case it is possible.
7. Museums of cottage products should be established in important cities of the country like Bombay, Calcutta, Delhi, Kanpur, Lucknow, etc., as well as in foreign countries. This will help a good deal in creating a demand for the products among the public.

2. 'The Economics of Indian Agriculture' By Dr. B. V. Narayanaswamy, Pt. II P., 452.

POULTRY IN RURAL INDIA

By: **Rameshwar Nigam**

INDIAN agricultural industry, sustaining as it does, nearly 73% of the population is in a state of decay due to the increasing pressure on land, old methods of cultivation, and the uncertainties and the peculiarities of agriculture as a profession. The problem, therefore, of increasing the standard of living of this vast majority of population is one of great importance. All round development in the methods of agriculture should be undertaken and the subsidiary industries that served as a 'second string in the bow of the cultivator' should be developed. The case for such rural industries is very strong due to the fact that the agriculturist remains without work for several months in a year. According to Royal Commission on agriculture the rural population remains out of work two to four months and according to

4. Lack of living contact with the kisan, both on the part of Government and the educated public, resulting in general lack of enthusiasm on both sides for the "Grow More Food" campaign.

5. Growing corruption and indifference to anything but personal gain amongst the people.

Consult Kisans

The constructive suggestions regarding these points which come to my mind are as follows:—

Point 1: In the long run it is the kisan himself who knows where the shoe pinches and it is also the kisan who knows from life long daily experience what to do and how to do it. He undoubtedly can be benefited by guidance and advice, but one of his chief needs is to have his day-to-day difficulties relieved. I would suggest that a selection of kisans, from various parts of the country, who work with their own hands (not small zamindars) should be called together and in consultation with them, the experts should draw up realistic and practical schemes. We have to grow more food immediately. Big projects will avail us nothing in this particular direction.

Point 2: Government should raise the pay of the lower grade staff and, as the cost of paying their officials is already tremendously heavy, and cannot well be increased, it becomes essential that the highly paid officers should receive less, in order that the poorly paid staff may be raised to a point where they can make two ends reasonably meet without resorting to dishonest methods.

Stronger action should be taken by Government in all cases where corruption and inefficiency or slackness are reported amongst Government officials. At the same time a corps of public workers should be formed to work side by side with the Government staff in the development departments; for example, every Agriculture Supervisor in charge of a Seed Store should have with him a public worker to help in the propaganda and check any undesirable dealings. The corps of public workers should invite intelligent and experienced kisans as advisers.

Government should publish pamphlets and booklets for the benefit of their own officials and the public in general, describing the horrible state the country has got into, and the absolute need for us all to reform. At the same time descriptions can be given of discipline and honesty in other countries where things run better. And examples can be shown from history of the fate of the countries and empires which lost their moral bearings as we have at present. In this respect the public press can give great help. I would also earnestly suggest to newspaper editors that they should open their columns to descriptions of bribery and corruption experienced by their readers in daily life.

Cut Red-Tape

Point 3: No doubt the Food Controller has been given very wide powers, and it must be hoped that they will be sufficient ruthlessly to cut through the red-tape which paralyses all development work today. For instance, bricks and cement for masonry wells, oil for tube-wells, trucks and petrol for transport of manure, iron and steel materials such as piping, barbed wire etc., need such a terrific effort to be obtained that people often give up in despair. And if they do at last procure their requirements, it is as likely as not to be too late in the season. Even in Government schemes it is the same desperate struggle with red-tape and pigeon-holes.

Point 4: I believe the root cause of this state of affairs to be the snobbish kind of education imparted by our schools and colleges, which makes the student, for the rest of his life, think himself superior to the man who guides the plough. This outlook cannot be changed easily. For immediate effect, broadcast propaganda can be carried on through the press, cinema and radio which will make some superficial difference. But for deeper influence on the character, a rule could be made, that, from the high schools and colleges no student will be accepted for examinations who has not been through a definite period of field work, and passed the necessary tests; say six months' field work for high school students and one year's field work for college students. If the scheme is well drawn up and carried out in the right spirit, it can undoubtedly have wonderful results.

"Fight Evil Within"

Point 5: For this, Government should themselves launch a nationwide campaign, in which they should seek the help of all national workers and the public in general. Every available means should be used for awakening the people to a sense of the shameful degradation into which we have fallen, and the inevitable doom which awaits us, unless we rouse ourselves and fight the evil within. The public press can, of course, help enormously. The cinema and radio should go all out in this campaign. The best authors, dramatists and singers should volunteer their services and fill the cinema and radio with rousing and uplifting drama and music. At the same time, through these channels the public should be led to realise that they have got to play their part in the campaign. Mere criticism is of no avail. Corruption would be impossible if the public refuse to bribe. We are all one, and must swim or sink together.

—"*The Sunday News of India*".

A PLAN FOR THE DEVELOPMENT OF COTTAGE INDUSTRIES

By: V. P. Sharma

BEFORE discussing a plan for the development of cottage industries there should be discussed the defects inherent in the present day economy of the cottage industries. These are:—

1. The cottage industrialists are labouring hard for their survival under the clutches of the money-lenders and the middlemen. Efforts should be made so that the artisans may develop the habit of self-help. Cooperative Societies should be organised for the benefit of these workers. They will supply them the required raw materials, arrange for cheap credit and look into the marketing of finished products.

2. The small cottage worker is being thrown out of employment on account of large scale concerns. In order to recover his old lost position in the rural economy the artisan should make improvements in his production and have it organised on a cooperative basis.[1]

1. 'U. P. Information', March 1946, P. 28.

the U. P. Banking Enquiry Committee report the cultivator is engaged for not more than 200 days in a year. In order to utilize this leisure profitably introduction of some suitable cottage industries would be of ample service in adding a few extra chips to farmer's already scanty purse and gainfully occupying his leisure.

A large number of subsidiary industries can be suggested which can suit the farmer's purse and also his surroundings and nature.

Among the subsidiary occupations poultry keeping is easy, cheap, convenient, interesting and more profitable.

It can be carried on in almost any and every village by any agriculturist side by side with agriculture, because birds can easily be looked after by every member of his family, young, old, man or woman, boy or girl with very little equipment.

The industry is not new to India and is still carried on in many parts though not in an organised manner. The religious prejudices stand in the way of its progress. The industries are in the hands of Mohammedans or the low cast people only. Due to this fact the partition of India has given it a great set back.

In India poultry can be improved to a great extent by crossing it with superior breeds, by better feed, and by proper housing. Now a days when there is acute shortage of food it should be taken up very seriously.

Cross Breeding is very necessary for improvement of eggs. There should be Australian Orpingtons and Rhode Island Reds. The White Leghorn has been the breed most introduced so far, it being well fitted to the climate and the best producer of eggs.

Cross breeding (white leghorn, Cocks with country hens) has been experimented in India and has brought a great improvement. One Leghorn Cock is sufficient for at least 12 hens.

For feeding, we have nothing to do. The hens search their own food and eat insects etc, and waste material of the store.

The housing problem can also be solved very easily. The waste land can be used for poultry yards and the work of looking after the hens may be given to women and children of the farmers who have no work to do.

When we have improved the breed and made provision for feeding and housing then the last problem is of marketing the eggs.

At present there is no organized system of marketing the eggs and on account of meagre transport and storage facilities the eggs do not command a wide market. The villagers sell their eggs in the nearest market at a low price.

Co-operative marketing of eggs will be the best method for these poultry keepers. This will develop in them a spirit of self help. Co-operative centres should be started at each important market and the sellers must undergo the necessary training before they are able to sell them either to the Co-operative store or to individual customers.

There are Government experimental farms at Lucknow, and at Agra and experiments are being made for improving the quality of eggs. A stamp is given on all good quality eggs after testing and weighing them. A stamp with date should be given in order to improve the product. If poultry farming may be carried on such co-operative lines the profits will be high and the quality will also be improved. In

America the value of poultry product is greater than the total wheat crop.

In Denmark too, poultry plays a very important part in the economic life of a cultivator. In China, as well, the cultivator depends to a very great extent on the income of his poultry. Large quantities of eggs are exported from these countries. Such villages in these countries as cannot export fresh eggs daily due to transportation and storage difficulty, dry them into powder and export the powder to deficit countries and thus earn a great profit. If it is developed here in our country the conditions may also be favourable here and the demand may also increase.

So the farmers must not be orthodox, and should give up all prejudices. Then and then only they can make this industry more prosperous and our cultivators more rich and happy.

It is not yet late, and the agriculturist should seize this opportunity and take up poultry farming. The educated and enlightened people should now organize efforts to induce the people to take to poultry farming more and more and also find out market by Co-operative means.

The Provincial Governments are also very serious in developing cottage industries, so our agriculturists must make the best use of this opportunity. They can develop it for their good very easily because this mixed farming is very suitable for the country as a whole under the present conditions when there is shortage of food, Ghee, Milk, wheat etc. Its development will be an important factor in balancing the poor man's diet.

COCOA-TREES

By: Mr. V. S. Bendrey

SOMETIME back I brought to the notice of your readers the uses of coco-trees current in the 14th century. Today, I quote from a Venetian traveller, Mr. Nicolas Manuchi, who went round several places in India during the latter half of the seventeenth century. His observation is more detailed and gives industrial and medicinal uses as known some three hundred years ago.

"There can be no doubt that something curious can be written about a tree which generally grows in India near the sea. It is called palm-tree or coco-tree. This tree has many roots about the thickness of the little finger, and it grows to a great height but increases very slowly. When seven years have passed it begins to yield fruit; ordinarily it occupies a circumference of two cubits and three-quarters, there or thereabouts, and it lives for a hundred years. At that age it grows to as much as ten arms' length; the stem is straight like the mast of a ship, with the branches or palm-leaves at the summit about two arms in length. The leaves are two cubits long, lying close to one another like organ pipes, three inches in breadth. In the middle of the leaf is a rib, of which they make brooms, et cetera. They also make mats from the branches, and these serve as carpets to the natives of the country. They thatch houses with the leaves, and they are also used as decorations at festivals. Every month a new branch

appears in the middle of the palm-tree, and the oldest one falls off. Each tree has about thirty branches, and amidst them comes out the flower, enclosed by nature in a shield about a cubit long, nearly ten inches in circumference, and coming to a sharp point. When it has reached its proper size, the covering opens and the flower shows in the shape of brooms. On each branch of the flower you see its fruit stuck on like buttons, and these, swelling until they are like nuts, are then called coquinhos (little coco-nuts); they are used for many infantile complaints, such as diarrhea and mouth-sores. When grown to the size of twenty-eight upto thirty inches round, and as much in length, they are called lauha (shahala). The nut is then full of sweet water, a drink of which is very refreshing. It is used in inflamation of the liver, the kidneys, and the bladder, and increases urination. It is also good for excessive heat of the liver, pains in the bowels or discharges of mucus or of blood; it also refreshes in the season of great heat.

"When nuts become ripe, the rind hardens outside and the water inside changes into a pulp called coco, which lies inside a hard shell that is called chereta (chiratta: Malayalam word; Karati: Marathi word), and is like a nut. When the rind has been drawn off, they use it to make ropes and cables. The coco, when out of its husk, has sixteen to twenty thumbs (pollegadas), which European physicians call Nos Indica (Indian nut). From the shells (chereta or Karati) of these cocos are made dishes (porzulanos), vessels, spoons, handles, rings, rosaries, buckets to draw water, and many curiosities. The substance inside, which has about the thickness of an inch, is used for many dainties, being added to dishes in cooking. An oil is also made and usually applied by the women to their hair, which is their greatest delight. This oil is also employed for many medicinal purposes, such as in burns and ulcers, and an ointment is made with it. It serves for a purge to the lean and irascible, expels bile, and reduces adipose tissue.

"Usually these trees yield four or five flowers, and in each flower are contained fifteen to twenty cocos. Every year it produces fruit three or four times, according to the strength of the soil; in Goa I have seen it yield four crops.

"Having finished talking of the palm-tree's fruit, I will now speak of its juice, called by the Indians *sura*. When they want to draw the liquid, it is first necessary to open the flower, it being then in its rind; the end is cut, and then they begin to depress the whole flower in order to collect the juice, and fixing it, they attach to the end an earthen cup into which the substance drips. This is done twice a day, and each flower yields each time twenty ounces, more or less, of the distillation. When drunk fresh it is sweet and suave, but kept for twelve hours, it tastes like beer and goes to the head. It is used by the Indians in place of wine. From this liquid are manufactured aqua ardente, vinegar, and sugar. The Indians ascend and descend these trees by clinging to the trunk and putting round it a rope of fibre, and into its ends they place their feet.

"There is another class of palm-trees which is called Palmeira brava (the wild palm), which takes many years to grow. This tree produces fruit in the month of March, and the yield lasts upto August. Inside each fruit there are ordinarily three lumps of soft pith which are very refreshing. Eating them is useful in clearing the sight of those unable to see at night. In the same season it yields a liquid called sura, and it has the same effects as, and some resemblance to, the palm-tree juice already described. The spirits distilled from this palm-juice are the best. From the leaves they make fans, mats, sunshades, small baskets, and other curiosities. After the fruit has ripened and pith hardens, and the juice is drawn from the shell; leaving this for a few days in the sun, it becomes a sort of marmalade, eaten by many of the natives in place of bread. From all these palm trees good returns are obtained."—pp. 185-7, Vol. III, Storio do Mogor, Niccolao Manucci, London, 1907.

We have many more uses developed since then. Articles of great workmanship and skill were and are being produced of the raw material. It is necessary to give currency to the best made articles. Demonstrations either through literature or exhibitions are sure to spread the knowledge of the economic and productive values of coco-trees. While in London, I was amazed to notice the various artistic uses of Bamboo trees exhibited in the London Zoo. The numerous articles exhibited there were worth decorating the houses of the rich as also of the poor. The skill localised at few centres must be made commonly known to all. Similarly, the uses of coco-trees deserve to be widely demonstrated. This can be done if all the species made of the coco-tree are collected together and sent round place to place for the village people to see and think of the ways and methods employed in manufacturing them. A film-show may prove useful but is not likely to impress on them all that is really needed.

NOTES ON THE CULTIVATION OF DECIDUOUS FRUITS

By: B. L. Choudhri

(1) The Apple (Pyrus malus, Linn).

THE apple may be called the king of deciduous fruits. It is a moderate sized tree growing about 20-25 ft. high and is indigenous to Eastern Europe and possibly in the Western Himalayas between 5,000 and 6,000 ft. In India it is largely cultivated in Kashmir and the Punjab including the high altitudes of Darjeeling and the Khasi Hills, where it has been introduced recently, and also in the higher altitudes in Sind, North West Frontier Province, Central India and the Deccan. The best fruits are produced in Kashmir and the Kangra Valley whence they are marketed all over the country. Government orchards have been established at Kumaun, Ootacamond and Shillong where some of the European varieties are grown successfully. Apple does not grow in the plains of India.

Apple trees in India are propagated by layering and grafting on European or common country stocks. Cuttings may also be tried, but they have not been successful in Shillong. Cuttings may be tried in winter or in spring. Grafting is done in January and February and continued upto March.

In selecting site for apple in the hills, one should try for a south-east slope where the trees get sufficient sun, and are saved from the North-West Wind. More-

over, the warmth obtained by the trees from the morning-sun is very helpful for their growth.

Soil and Climate :—The soil best suited for apple is deep, rich, well drained calareous loam, but it may be planted in any soil provided it is not clay or sandy in character, both of which should be avoided. Apple enjoys also a gravelly sub-soil which helps in drainage. It does not stand water-logging at all.

Apple thrives best in a dry cold climate with low percentage of humidity and medium rainfall. It is for this reason that the hills in Assam and Bengal are not so well suited for its cultivation, except in the higher altitudes of 5,000 ft. altitudes of 5,000 ft. and above. Its successful cultivation is found where the temperature goes down low enough for causing frost or snowfall, so as to make the tree dormant in winter.

Propagation :—Root-grafting is the main source of propagation of apple, either on whole roots or root pieces. But where the tree suffers most from underground wooly aphids, they are grafted about six inches above the ground level. The Nothern spy roots that are mostly used in America are known to be resistive to wooly aphids attacking the roots. Generally whip grafting suits apple best. The grafted trees are left in the nursery for a year. Apple seedlings for grafting purpose may be obtained from Kulu or Kashmir.

Planting :—Apple trees, except a few varieties, do not grow very high. They may be planted 20 to 25 ft. apart. Some sort of inter crops may be grown in between the rows. For this, cowpea, soyabeans, french and country beans, peas and flamingia suit best, especially when the trees are put in counter lines in the form of terraces. Growing of straw-berries, maize, and potato, may also be tried, if the trees are planted in a level ground.

In planting apple trees in the hills, it is better to cut dry terraces and plant them in counter lines. If terracing is not possible, one should cut a semi circular level bed for each tree on the slope and plant the tree right in the centre. Pieces of stones should be put on the edge of the bed so as to check excessive wash by heavy showers.

The best time for planting the apple is January to February when the graft becomes a year old in the nursery and is dormant. The nursery plant, if tall, should be cut back at 30 inches from the ground when planted in the garden and no branch should be allowed to grow below 20 inches.

Pruning:-Apple trees require pruning in the second year to a certain extent and also in the third year, if necessary, to give a good chance for the tree to form a broad 'V'-shape, which is desired under Indian conditions. Trees which grow tall, like the peas, produce long branches which become susceptible to sunburn and shy in bearing having very few fruit spurs. The trees begin to shape well from the third year and begin to bear. Thick branching in an apple tree is a sign of non-fruiting. Such a tree should be judiciously pruned. Summer pruning to reduce the wood growth and induce fruit growth is applicable to apple once in three or four years. Such practice should not be continued year after year as it weakens the tree by removal of carbohydrate materials in the plant (which are mostly removed from the upper part and) stored in the lower part of the tree in winter when the tree is dormant, and brought up in spring by the flow of sap. (So) pruning in winter removes the least plant food and so should be resorted to.

Thinning:-As apples grow in bunches in some varieties from the terminal buds, thinning of fruits is necessary. Moreover, sometimes trees over bear and unless thinned out the fruits do not attain a good marketable size.

Manuring:-Apple responds well to manuring. For this bonemeal and leafmould suit well. Leafmould pits should be dug out in garden on all sides and filled with wild leaves collected from jungles. Application of 2 lbs. to 4 lbs. of bonemeal per tree according to size is advisable. It has also been found out by experiment that Sodium Nitrate, Ammonium Sulphate, ammophos and niciphos help in the thrifty growth of trees and induce heavy bearing. (The) expenses (thus) involved in manuring are (well) compensated in apple cultivation.

Irrigation and Conservation of Moisture:-

Irrigation for apple is not required in the Himalayan region and the Khasi and Yayantia hills where the rainfall is quite sufficient. By proper hoeing, addition of humus from cut weeds and mulching with dry weeds and forest leaves, the moisture around the base of the tree, can be easily conserved adequate enough to meet its water-requirements. Mulching should be done just before the rains cease in August-September.

As the trees grow mostly in hill-slopes, the bases of trees should be kept clean by removing the weeds by light hoeing. After this the bases should be covered with dry weeds and leaves, as stated above in the form of pads. In case there is fear of white ants, the space right near the trunk should be kept open. This will check the growth of weeds, specially the thatch grass which is the worst enemy to the trees. If possible, cowpea should be grown and green-manured. This will add humus to the soil which is badly needed in most of the hill-soils. For this cowpea should be sown in April-May and incorporated in July-August or September.

Picking and Marketing:- Apples are always picked by hand in a bag. In picking, one should not pull straight but give a twist and side-way pull which will detach the fruit at the stem end. The fruits should not be kept in containers, with sharp edges which may cut or cause abrasion to fruits. They should be handled softly.

Apples picked from the garden should be cured for a time in a *machang*, specially erected for the purpose. Atleast a week should elapse before the fruits are taken out for grading. For market, three grades are desirable. The first grade should contain the best fruits good in colour, and free from any blemish. The second grade may have trivial blemishes on the surface. The third class will include all the blemished, bruised or wormy apples. In Western countries fruits are packed in standard-sized boxes under various grades. This should be introduced in places like Kashmir or Kulu where apple is grown commercially for export to all markets in India. During prewar days due to transport facilities and cold storage large numbers of packed apples in boxes were imported to India from California, British Columbia, Oregon, Australia, Cape Colony and Japan and were available in all towns throughout the year. Such arrangements are required for hill stations especially in Kashmir and Kangra Valley in the Punjab. Unless this is done, it will not be possible for the Indian apple to

Pollinations in Apples:- It is well known that some of the varieties of apple are self-sterile. For this reason one should not grow one variety only but should have in the garden two or three varieties together of which one atleast is known to be self-fertile.

2. The Pear (Pyrus Communis, Linn)

The common pear (Nashpati) is a small tree found to grow wild in Kashmir. It is cultivated in Northern India, Nilgiris, Darjeeling and Shillong. The fruits are corky, gritty and lack in flavour that is found in European pears. It is grown mostly from cuttings on the hills and also in plains planted on high lands. It may be easily grafted or layered. The trees grow both in dry and moist places and stand water-logging to a certain extent.

The European pear thrives well in a deep, rich loamy soil. It can also grow on shallow soils or over a clay sub-soil where other fruit trees such as apples, peaches, etc., may not stand well. It grows well on calcarious soils as those met with on the hills. It does not thrive in the plains, although local *Nashpaties* grow fairly well.

Pears may be planted 15-20 ft. apart. As the trees generally form a pyramidal shape, it is necessary to have them low and allow them to spread. The trees get sun-burn, when they are too much exposed. They are fully deciduous on the hills while in the plains the wild pears (Nashpati) are semi-deciduous. It is advised by some that pruning in winter induces fruit-growing better, while others advise summer-pruning after the fruits are harvested. However, winter pruning is useful for bearing trees and summer pruning for poor trees for good growth. Although the indigenous pears are sold very cheap, they fruit profusely and so are profitable for cultivation in the hills.

The introduction of European Pears in India is very recent. They are propagated by budding or grafting on local pear stock. European pears are small-sized trees. Their soil requirement is almost the same as that of the local pears, but they require manuring and better care for thrifty growth. Under Indian conditions the trees remain dwarf and shy in bearing. They grow in a compact form and require judicious pruning.

In growing European pears, the question of pollination should be considered Some of the pears are self-sterile and so two or three varieties should be planted in alternate rows. Trials of top grafting wild pears with European varieties have not proved a success yet.

Pears should be picked when they are ripe but firm. Sufficient care should be taken to handle them as they spoil by rough manupulation. They should be packed like apples for distant markets.

3. The Plums-Alubokhara (Prunus communis, bokharansis)

The common plum is a medium-sized tree which is indigenous in Western Himalayas from Garhwal to Kashmir growing upto 7000 ft. in the hills. It is known to be grown in the Nilgiris in South India and Assam both in the hills and plains. The fruits are bitter to taste and they are best utilized as jam or stewed fruits. They serve well as good stocks for grafting the European varieties. Dried fruits known as *Alubokhara* are imported from Afganistan and Baluchistan where they grow almost wild. The dried prunes that are marketed in packed

tins are a variety of plum which is found to grow in France and California. The European plum (prunes domestica) is cultivated in the plains and hills of Northern India. The varieties grown in plains are inferior to those cultivated on the hills.

The European plum is a moderate sized tree which has established itself very well on the Indian hill stations and is spreading rapidly. The trees grow vigorously and fruit profusely without much care. It has a real commercial prospect in future. When properly planted in high, well-drained soil it grows well in the plains, but has not yet proved to be successful in producing fruits. The trees are generally girdled at the base right near the surface of the ground. Perhaps this is due to acidic condition of the soil which they can hardly stand. Although the trees are found to be quite hardy, they require protection from strong winds. Moreover, full bearing trees require propping to save the loaded branches from breaking down.

European plums are propagated by budding on the local plum or peach stock both of which are equally successful. Grafting may also be adopted. As they throw out suckers from the base, these are also separated and untilized as stock. The time for grafting is from December to February and that of budding is April and May in the hills. The trees should be planted 20 to 25 ft. apart. The question of pollination should be considered in European plums as there are some varieties known to be purely sterile and consequently, two to three varieties should be grown in alternate rows.

Plum trees require pruning from the the first year after planting. They throw too many suckers every year which should be removed. Sometimes long canes grow, which, when found to become shy in bearing, should be pruned. As the plums bear on old fruit spurs, they should be pruned judiciously. A good plum tree will form into a vase-shape which will give more fruiting area. Top-bearing may well be done on old stumps by scions of improved varieties.

Marketing of Plums:- Generally plums are packed in bamboo baskets. Packing in small flat boxes made of pine-wood is recommended. For distant markets the fruits should be packed when they are fully mature but not ripe and soft to the touch.

4. The Peach (Prunes Persica, Stocks)

The common peach is a small deciduous tree and is found to be cultivated all over India. It grows both in hills and plains upto an elevation of 5000 ft. The cold climate of the hills is best suited for size and sweetness of fruits.

The local peaches are found grown in gardens in high lands. The fruits are small in size and rather bitter to taste. They are used as stewed fruits and may well be utilized in making jam. They serve well as stocks for European varieties.

The European varieties introduced in Khasi hills have proved a real success and their cultivation is spreading rapidly. They are propagated by budding and grafting on local peaches or plums, both of which are equally suited for the purpose.

As regards the soil requirements, peaches enjoy a light, deep, sandy loam soil. They cannot stand water-logging for a long time. Even clay loam soil will allow them to grow provided it is well-drained. The general hill soil is quite suitable for their growth.

The peach may be planted 20ft. apart either way. One year old nursery-trees

should be planted in winter which is the best time for all deciduous fruit trees. In the hill slopes planting them in contour lines in terraces is advisable.

The trees require pruning from the beginning. They must be cut back in the first year having three branches widely separate. As they send out suckers in abundance, these should be removed from time to time. Pruning in the second and third years should be continued to remove irregular branches so as to give the tree a good vase-shape. Thus pruned, the tree will come to bearing stage and will not require much pruning later. Long canes always develop causing the tree to be shy in bearing. These should be cut back. As peaches flower on the new shoots, these should not be removed. Severe pruning will grow a number of shoots on the stumps which should be thinned out. To renew the peach tree, cutting back into the older wood is the rule.

Peaches respond well to manuring; for this purpose bone-meal and sodium nitrate suit best in the hills. Organic manures, such as cow-dung and leaf mould, are also very useful in hill cultivation. Old peach trees may be top worked by improved varieties either by grafting on old stumps or budding on new branches coming out of them.

The peaches have a great demand both in the local and outside markets. For City Markets, where the fruits are sold at a very high price, fruits should be picked carefully when they are ripe but firm and show the desired colour. They should be packed in flat boxes like the plums with partitions in the middle and sufficient peach leaves or any other suitable packing materials. The boxes should not weigh more than 15srs. each.

The trees suffer from a fungus disease known as peach leaf curl. The trees should be defoliated after harvest, pruned and treated with Bordeaux mixture or lime-sulphur. Two consecutive sprays will suffice.

The nectarines are a variety of peach with a smooth skin like the plum. It is a mutation from peach. The fruit is not much in demand in the market. They are propagated just in the same way as the peach.

5. The Apricot or Khubani (Prunus Armeniaca, Linn)

A moderate sized deciduous tree cultivated in the Western Himalayas. Its native home is known to be China. The local varieties are found to grow almost wild in Afganistan, Kashmir, Baluchistan, Garhwal and other places. They are very small in size and are generally dried. There is a great demand for dried apricots which are imported mostly from Afganistan.

European varieties have been introduced in almost all hill stations. The trees are mostly shy bearers and fruits are mostly of a poor quality in comparison with those of the Western Himalayas.

The apricots can easily be budded on the local or indigenous stocks. It can also be budded easily on the peach. It grows in a wide range of soils from clayey loam to sandy loam. It thrives well on rich garden loam soil.

The trees may be planted 15 ft. apart. They require pruning to give a good vase-shape. As the fruit bears in the old spurs like the plum and also on new wood like the peach, sufficient care and judgment should be used to prune them.

The apricot responds well to manuring. The trees suffer a good deal from drought in dry season. So conservation

of soil moisture is necessary by the addition of humus. Dry weed or straw mulch is very helpful in conserving the soil-moisture.

6. The Cherry (Prunus cerasus, Linn)

The sour or dwarf cherry is a native of the Caspian Sea. It is cultivated in the Punjab, the Himalayas, the North Western Frontier Province and Baluchistan.

The introduced European cherry is a small sized tree. It has done well in all the hill stations in India. In the Khasi hills the trees make a good growth but are shy in bearing. This is perhaps due to deficiency in phosphoric acid content of the soil. So application of super-phosphate or bone-meal is advisable. Application of 2 lbs. bone-meal or super-phosphate per tree will serve the purpose.

The question of pollination should be considered in growing cherries. As some of the varieties are not self-pollinated, it is advisable to grow 2 or 3 varieties in alternate rows.

Cherries are propagated by budding on their own roots. The wild trees give out innumerable suckers which may easily be collected and transplanted in a nursery in rows for budding next year from March to June.

The cherry trees generally grow tall in a pyramidal form and may be planted 18 to 20 ft. apart. It is better to prune the trees to make a low head. As the trees bear fruit on the long matured canes and on the body of the big branches in spurs, they should be pruned judiciously.

Cherries respond to mature very well. Cow-dung or leaf-mould with bone-meal gives good results. The following fertilizer mixture is also recommended:—

2 lbs. sodium nitrate or ammonium sulphate.
2 lbs. bone-meal.

The fruits have great demand in the market. They are either eaten raw or used for culinary purpose. There is a good demand for this fruit in hotels, where whole fruits are preserved in Syrup and are used in making pastries and cakes.

7. The Quince (Cydonia vulgaris)

Quince will grow well in all the hills where apples and pears grow. The trees in most of the hill station fruit gardens grow vigorously and produce good fruits no doubt, but it has practically no market among Indians, while the European uses it in making preserves, especially jelly.

The trees are propagated by cuttings and can be grown as bushes or trees. When pruned well and taken care of properly, they will grow to good sized trees bearing well. Its cuttings may be used as stock for apples.

AGRICULTURE IN MADHYA BHARAT UNION

By: Prof. P. L. Golwalkar

THE 'Grow More Food' question has been again brought to the forefront. The problem of food crisis requires solution on the war-basis for which the top-ranking leaders have made a clarion call to the nation. It becomes, therefore, the duty of the Government as well as of the nationals to see that either we succeed or we shall be doomed and loose the nation's prestige in the world. Hence in this short note I am making an attempt to familiarize the readers with the agricultural position of the Madhya Bharat States Union.

Position

This union was formed on the 28th May 1948 by the merger of twenty two states of Central India, having a total area of 46,527 sq. miles, with a population of 71,57,197 (according to 1949 Census) at an annual income of Rs. 82,741 millions. The major portion of population is living in 21,094 villages of the Union whose only source of livelihood is agriculture.

The total area under cultivation for the past year was twenty lac bighas giving a total yield of fifty-five thousand tons of food grains, exclusive of the money crops like oil seeds etc. This meagre quantity of food was not sufficient for the Union subjects and hence assistance from the centre was sought to fulfil the requirements. Besides at present there is fifteen lac acres of kans-infected area which can be brought under cultivation and can give an average yield of 10 to 15 maunds of cereals per acre making the Union Self-sufficient in food.

Land Reclamation

During this year the M. B. Union has undertaken a Land Reclamation Scheme, under which by the end of seven years the whole kans-infected area will be brought under plough, for the implementation of which Rupees Eighteen lacs have been allotted.

But long term plan would not help us any more taking the nation's declaration in view. Hence with this view the Madhya Bharat Government has decided to bring under cultivation the kans-infected area of one lac acre for the present. To achieve this, a tractor unit has been received from the centre instead of two units asked for. The opening of the centre was inaugurated by the Hon'ble Food Minister Shri Jayaramdas Daulatram in March 1949. With one unit of tractor consisting of 15 tractors and one Bulldoser, the scheme is being worked out in village Khari, 11 miles from Bhilsa. It is also expected that during the current season an area of 10,000 acres will be brought under plough giving an approximate total yield of one lac maunds of food grains, which will suffice for 20,000 people for a year. Thus if this scheme is operated enthusiastically, seeking full co-operation from the people, the whole kans-infected area of fifteen lac acres can be cleared and brought under cultivation by the end of 1951 making the Union not only self-sufficient but a surplus region. For this centre should help the Government by providing at least 3 units of tractors which will enable speedy working and achievement in this sphere of national urgency.

Irrigation

To begin with, the M. B. Union has sanctioned Rupees Sixty-five lacs for this year. For working and surveying Chiri and Khuj irrigation projects in Dhar and Sindh irrigation scheme, Government has sanctioned Rupees three lacs during this budget Session (including Rupees one lac for Kaketo Umedgarh Hydro-Electric Scheme expected to produce 1200 K.W.)

Also the Government has sanctioned Rupees five lacs for construction of small tanks. Rupees two lacs for the repairs of old tanks and canals. Rs. 90,000/- for the repairs of Narsingarh tank which is nearing completion and Rupees one lac for the development of Avada Canal.

Seeds, Manures Etc.

The Government has also made arrangements for distribution of improved and better variety of seeds for the Agriculturists and has got a plan under consideration for the reorganization of agricultural Research Institute. For the distribution of good manures and agricultural implements an amount of Rs. 2,50,000 has been sanctioned for this year.

RURAL INDIA

Vol. XII, No. 9] OCTOBER, 1949 [Whole No. 127

"Salvation of India lies in Cottages."
—*Mahatma Gandhi*

ELEVEN YEARS

'Rural India' made its first appearance on the 1st of November 1938. The present issue therefore, completes Eleven Years of its dedicated service to the country in the field of constructive nation-building. It goes without saying that it has been a pioneering enterprise in the sphere of rural and constructive journalism at heavy costs. And, the Day of Rural and National Reconstruction for which it has worked ceaselessly for over a decade in the midst of trials and sufferings has yet to dawn.

This has been a period of unprecedented destruction the world over including in our own country. We do not seem to be out of the woods just yet, though we have attained freedom. The forces of destruction still dominate the world horizon. The power and profit motive and not the 'Service Motive' to mankind still reign supreme. The post-war period with its great hopes and promises of Atlantic Charter and Five Freedoms to everyone everywhere turned out to be one of the darkest periods in world history. The stark reality of want, hunger and acute misery stares the humanity in the face. The world as a whole is passing through a great political and economic crisis, the like of which was hardly witnessed. We, being a part of the world must of necessity share the inevitable.

Fredom and National Crisis

Freedom was synonimous with peace, plenty and prosperity. In our own country, these were the very hopes raised in the minds of the people. The promise of providing five essentials of life to every Indian citizen viz: (1) adequate and nutritious food, (2) decent clothing, (3) sanitary housing, (4) Education, and (5) health, could not be fulfilled. On the contrary, the people are faced with acute conditions of scarcity and privation accompanied with growing unemployment, decreasing national production, moral degeneration and maladministration. This in a way is a *'bolt from the blue'*. Even a confirmed pessimist could have hardly dreamt of these conditions in a post-Freedom Era in our country. It is no wonder, there may be widespread discontent, inaction and frustration in the country as a result of these depressing conditions.

In the third year of our Freedom, we no longer talk of planned and all-sided "National Reconstruction" of the country involving capital investment of ten and fifteen thousands of crores, which was our pet-theme in the pre-freedom Era. Social Security, compulsory educational and health facilities to every citizen in the country and linking every village with metalled road may hardly be entertained as a practical proposition in the present context. It seems, the dreams are slowly

giving place to realities and both the Government and the people feel astonished and perplexed in the face of an unprecedented national crisis they are faced with. We find ourselves on the verge of a great economic crash and do not see our way how to avert it. The problems of increasing national production in general and food self-sufficiency in particular are giving quite a headache to the leaders and administrators in our country. The Government has taken a decision to attain food self-sufficiency in the country by the end of the year 1951. 'Food Drive', therefore, is our National Programme to win back our battle of economic recovery.

Food the Focussing Point

Food deficit has been a problem with us for over six years. The nation as a whole subsist on under-nourishment from year to year and that too on food-grains imported from outside the country. Besides physical deterioration caused by chronic under-nourishment to the present and the generations of the future, dependence on foreign imports of food-grains to the tune of Rs. 150/-crores has jeopardised the economic stability of the country. Very much alike food, we have started to depend on foreign borrowings for our very economic existence. The food campaigns conducted under Government auspices in the past only resulted in increasing more and more deficit in the country till the Prime Minister felt compelled to conduct the Campaign under his personal guidance and supervision.

War Emergency

Though necessitated by the compelling force of circumstances to conduct the present 'Campaign' on the basis of War emergency, one hardly finds war-like concentration of national resources in men and money or seriousness about the preparations to win the 'Food Front' at all costs. With the exception of a new post of the Food Commissioner created at the Centre and in the Provinces and State Unions, one does not see anything new reassuring about the success of the present 'Drive'. It is the same old machinery of Revenue, Agriculture and allied departments in the Provinces, Districts and Talukas, which was responsible for conducting the campaigns in the past and which only resulted in diminishing returns.

On a single Campaign in Kashmir in the course of less than 2 years, the Government has spent, as the reports say, somewhere between 30 to 40 crores of rupees and engaged a trained and disciplined fighting force of tens of thousands in various operations to win a decisive battle. All civil aviation was suspended all over the country to rush the fighting forces to Kashmir. And, the top-most leaders of the State, the Prime Minister, the Deputy Prime Minister including the Governor General made the Campaign their special concern, paid innumerable visits to the fighting front and encouraged the fighting forces by all possible means.

Food Front, we are afraid, stands not even a distant comparison with our efforts to fight the Kashmir Campaign. And, taking the area of Food operation of the country as a whole, which may be fifty times larger than that of Kashmir, we are required to employ as many times increased resources in men and money to reasonably expect a decisive victory at the food front. If it lacks concentration and application of resources, which a War demands, there

is no justification to call the present inadequate and slack effort at 'Food Production' a war-basis. Wars are never fought to victory with an amount of preparation which our 'Food Front' exhibits.

A successful 'Campaign' also means all round strengthening of our positions and leaving no loophole or vulnerable point to the enemy to force his entry. In the case of 'Food Front', the vast frontier of 'Village Food Organisation' all over the country which is wanting both in organisation and effective functioning is our most vulnerable point, and we doubt, if we have assured ourselves of our positions at the village end. The Village and the Farm are the most strategic and key points in our present campaign of 'Food' production, which have to be effectively organised in accordance with the recommendations of Lord Boyed Orr. It is only then and not till then that we may reasonably hope of our success at the 'Food Front'.

NOTES

GANDHI JAYANTI



THE next 'Gandhi Jayanti Saptah' which will be observed from the 2nd to the 9th of October all over the country is the 81st Birthday celebration of the Father of the Indian Nation. As usual, it will be devoted to the message of the 'Spinning Wheel' and such other constructive activities as are associated with his life and mission.

But this is merely physical or mechanical demonstration of the nation's loyalty to his message which we cherish as our great heritage. If Gandhi and Gandhism stand for anything, it is to create a society of men living on great principles of Truth and Non-violence. In other words, Gandhiji lived to create an absolutely Truthful and Non-violent society and he believed that his message will best be delivered through India with its spiritual back-ground of ages past.

Those of us who observe this 'Saptah' should search inwardly whether we have been true to this message of our Master, which is the spirit and essence of Gandhism. For all practical purposes, India of to-day is a living contrast to the India of Gandhiji's dreams. And, he died a broken-hearted man.

It is unworthy of us to have betrayed our Master and belied his expectations. This week, therefore, should be a week of real heart-searching and repentance and making a fresh resolve to live the message for which he lived and died.

THE NEW FOOD DRIVE

'FOOD' self-sufficiency is the problem of our national honour. It is not only the focussing point of the nation's best creative and administrative effort, but it is also the Arbiter of Destiny of this infant self-governing people. With practically collapsing economy and dwindling national production the situation imperatively demands exclusive concentration of our best energies in making the 'Food Drive' an unqualified success. It is not enough to continue to repeat the slogan of 'War Emergency' without corresponding action to justify what a war emergency is like.

Judged by the tests of adoption of war-like measures, dynamic and efficient personnel, well planned and scientific approach and vigorous 'State Drive', we regret to have to submit, that the present 'Food Drive' fails to satisfy any of these essential tests. And, an average citizen feels dissatisfied with the effort being made and is definitely sceptical about its ultimate outcome of India attaining Food Self-sufficiency by the end of the year 1951. The present 'Drive' is hardly distinguishable from the 'Food Production Campaigns' of old and does not satisfy the three well-known recommendations of Lord Boyed Orr. It is more or less putting new wine into old bottles. We shudder to think of the fate of this country if this last hope of our people is to end in smoke and slogan-mongering.

If so important and vital national undertaking as 'Food Drive' has not well-begun and lacks full-effort and vigorous 'State-Drive', it is simply futile, if not unwise, to wait to see its results at the end of two years. That would be rather risky if not criminal and the country in its present distressing plight can not afford to wait to see the result of a doubtful experiment which lacks elements of success. We appeal to the Prime Minister with all humility but with all earnestness at our command, to examine himself the progress made by the 'Food Drive' in different Provinces and State Unions in the light of the recommendations of Lord Boyed Orr and take steps to adopt such measures and to devise such machinery as may inspire confidence among the people and ensure definite results at the end of the next two years.

The next twelve months are destined to be a decisive factor to ensure success and stability to the present administration which rather depends on its capacity to achieve complete success at the 'Food Front'. There is no meaning to wait to see the result of an undertaking which has not the merit of sound and satisfactory beginning.

PRODUCTION EDUCATION—THE NEED OF THE NATION

By : Dr. K. N. Kini

WHEN only a few people take advantage of the educational system in a country, the good or evil effects of it may not materially affect the nation but when the children of the whole nation will be brought into school, the effects will be considerably magnified; and this is what is gradually happening in India to-day, as sections of people who were not keen on education for centuries and who were content to follow their traditional *production* occupations are now brought into schools which do not lay any stress on production of utility goods.

In short, our present education renders production people unproductive.

More and more children are admitted into elementary and secondary schools where the education is imparted is bookish, most of which has no direct bearing on one's living and least of all on the material prosperity of the country. Sons of agriculturists, who would normally work to produce more food and other goods of every-day use to the nation, are taught in schools subjects which have no relation to their parents' occupations and therefore *are rendered daily strangers to these production occupations*, when they finish schooling. They are anxious to find some employment in an office and are reluctant to go back to till the soil or engage themselves in any other occupations which produce utility goods. Thus the very agency which educates them has to employ them in transacting work where there is no production of material goods. Thus our educational system is being rendered economically unhelpful, nay, even wasteful to the nation.

The products of this education are often offered initial salaries which are far less than the amounts they were accustomed to spending as students. They feel that their education has not brought them an adequate pecuniary return. They are not able to help their parents who have spent huge sums on their education in great expectation that their sons and sometimes even daughters would contribute to their meagre earnings. Consequently, the parents feel disappointed and their sons feel the indignity and the shame of their position.

It is very well for men in affluence to say that education is meant for culture and for citizenship and not for vulgar use to earn a living but if we closely observe their life and the ladder by which they have attained to their present status, it will be found that this very "cultural" and "citizenship" education they received has been transformed by a peculiar favourable chance in life into "lucrative" education—be they lawyers, high government officials or successful businessmen. Even when they sought this so called "cultural" education, the real objective was vocational and pecuniary. When they have achieved their ambition of life, namely a safe lucrative career, they proclaim to others that the real objective of education is cultural, much to the chagrin of thousands of less fortunate brethren, especially of the middle class, who are not able to make both ends meet after their day's hard toil, sometimes in the very offices, where the former are employed getting twenty to thirty times their pay. Dissatisfaction is the mother of evil intentions and the dissatisfied youths join anti-social elements much to the discomfiture of government and especially the education department. They sow seeds of dissatisfaction among the youths in schools and colleges and create indiscipline. They also engender dissatisfaction among workers and cause inefficiency in industry.

Educationists and statesmen should think seriously what changes in the educational structure are immediately called for, which will furnish to the youths training that will fit them to earn a decent independent living and simultaneously provide them culture, a strong character and instruction in citizenship. *The earning motive is the strongest in every individual*, however much one may camouflage it. Every adult is employed the greater part of the day in earning his livelihood. If he does not earn enough, his interest in citizenship wanes, his character be-

comes weak, and he may even become a social evil and a political danger. *Hunger is the most formidable incentive to crime.* When the country was governed by a bureaucracy not responsible to the people, it could for a time ride rough-shod on peoples' aspirations and put down dissatisfaction with an iron hand, but in an independent country run on democratic lines by the will of the people, we shall have to find ways and means of meeting the just aspirations of youth and see that hunger does not stalk the land.

Basic education of seven or eight years' duration from the sixth year of the child to 13 or 14 years, where he is educated through crafts followed in his own environment by correlating cultural subjects with these crafts is the most feasible way.

Children love to imitate the adults. They wish intensely to produce goods of value to themselves. As they proceed with their studies, the economic advantage accruing to them and to society by the sale of the goods produced by them is the greatest incentive to further education. No difference in ideals is called for between urban and rural children, though the subjects of study may differ to some extent to conform to industries and occupations peculiar to each region. Child nature is the same whether children reside in the towns or villages. Poverty is rampant in the urban areas as much as in the rural. The urge to earn is also of equal intensity in both. The basic plan has been introduced this year in all of the urban and rural primary schools in Jodhpur State and no difference in the attitude of the children is discernible on account of the location of their residence. It is proposed to introduce this method in all the middle schools of the State next year, though in some of the schools crafts of lucrative nature are already followed.

In the high schools too, the production motive in education should be continued. Here the youths will be of ages about 14 to 16. Technical skill based on an understanding of the scientific principles underlying each of the processes involved is to be aimed at here. The youths of these ages are quite capable of comprehending the scientific principles and mathematical and graphical computations involved. Mechanical shop where wood and metal work including practice on lathe are done should be compulsory for all, in the town and the village. Rudimentary principles of civil, mechanical, electrical, automobile, aeronautical and sanitary engineering can be easily taught at high school stage. Specialised trades like metal foundry, plumbing and welding, printing, textiles, dyeing and calico printing would be very suitable. Building construction with interior decoration is of special importance. Agriculture, horticulture, sericulture, dairy-farming, poultry, sheep-rearing, weaving, pottery, fisheries, forestry, with courses in the production and repairing of appliances connected with these vocations, would be very useful subjects of study in the rural areas. Regional language and English could be cultivated by prescribing books in the respective languages dealing with these crafts and vocations. One of the reasons for the large failures in English is that the topics and themes are not related to students' experience. Should English texts contain lessons on local occupations with which the pupils are intimately concerned, the results in our public examinations are sure to shoot up to eighty per cent instead of the present 40 to 60 per cent. The largest failures are in English. Also English should be simple twentieth century prose. The other portions in English should be a

taboo at the high school stage. It is also a point for serious consideration of the educationists to decide if English may be an optional language. There are hundreds of students in high schools who do not prosecute their studies higher up and who are reluctant to study English. For them another Indian language may be the alternative to English. It is wrong to suppose that every high school leaver will take part in international bodies and therefore should know English.

Occupational civics could also be learnt in these languages. Study of Mathematics, Science, art and drawing, commerce and geography related to these vocations or trades would be the additional cultural equipment of the youth. The students would have studied enough of Indian history in basic schools, there is no need again to repeat the course in high schools. On the other hand history of industry and agriculture in the whole world in the regional language would be a stimulating study.

Roughly if half the time of the youths be spent in the practice of the vocation in the fields or workshops or both and the other half be given to the languages and other related subjects and occupational civics, an all round youth, vocationally fit and culturally sound will be produced. He will be able to cater to the skilled trades of the country and will thus be able to take part in increasing the production of consumable and capital goods. The old fashioned idea that only those boys who have been trained in bookish subjects are best fitted to go to colleges and higher technical institutions should be eschewed. The youths who have undergone training in *production education* should be preferred for admission to the universities which again should be completely transformed to constitute themselves into " production " Universities.

There are some subjects which are fit to be taught in industrial (urban) areas where exists factories which form a natural environment for the study of those subjects, namely textiles (mill), engineering, metallurgy, chemicals etc. So the urban high schools should teach these and allied subjects. The youths should have opportunities of visiting these concerns and also of having their practical training there. It would be highly desirable to sandwich practical training in factories with bookish subjects in the school by arrangements with industrialists. Russia has developed this form to the best extent possible. America and England have also succeeded to a considerable degree. We should try to introduce this method called " Co-operative method " in U. S. A. It will be highly beneficial to industry because the latter has a chance of determining who their best recruits of the future will be. Industry should pay the students for the labour they put forth and deduct from their wages for any waste they might incur by carelessness. This method will make the boys always be on their alert. It is in force in Ford Trade school, U. S. A.

One word more about culture. Culture is a continuous process which should be cultivated and developed throughout life. The school only lays the foundation and indicates the way. Grown-ups think that our school and college leavers should be finished products culturally. No. The latter should be regarded as only begir ners in the process. Libraries, journals the radio, cinema and travel and reading and study clubs, should continuously

increase the cultural equipment of the citizens and the State, should provide healthy opportunities in these matters to all its members. Also it must not be supposed that culture can be got only through literary books. Study of mathematics and science, pure and applied, industrial and agricultural processes, commerce including banking and insurance, transport systems, domestic and nursing sciences, military science, nay, study of all subjects which are useful materially to man, do impart culture to him. Culture of a person is to be judged by his attitude to his fellow beings and not by the amount of matter he has stored in his mind from literary works—prose poetry and drama.

While our present urban universities should in an increasing measure provide opportunities for *production education*, or even transform themselves into *production universities*, a new type of university should be organised in rural areas to suit the economic, social and defence requirements of the rural population on the one hand and the nation at large on the other. The rural universities should be pre-eminently universities for the production of food, clothing and shelter and by a system of home guards, provide soldiers in times of emergency. The subjects of study should be agriculture, animal husbandry including rearing of sheep, fowl etc., textiles, forestry, pottery, fisheries, rural electrification, rural engineering, rural building trades, rural home making, rural nursing and sanitation, etc., based on modern principles of science and technology. Rural education, rural economics, rural sociology etc., should be also included in the programme. The courses should also be so fashioned as to teach rural people to install small scale industries on modern scientific and technological lines.

One rural university for about a million population or even less should be thought of, so that the rural population may have easy access to these institutions of higher learning. Education from birth to death should be the motto and every rural citizen should have opportunities of having as high an education as he pleases to acquire and at any time of his life. Provision should be made for whole-time as well as part-time university studies. The colleges should institute courses to be held from morning till night so as to cater to the convenience of the villagers. It should be possible for them to get the highest degrees and diplomas by accumulating credits which may extend over a period of years instead of in two or three years as in the existing urban universities. The instruction should be imparted in the principal regional language.

Extension education should be a special feature. The results of researches carried on in the universities should be available to the people in their own language, so that they are forthwith benefited.

The University examinations should be internal. Education in rural universities should be free. By a system of university clubs for study and recreation, the rural people should feel that their universities are community centres where they can get intellectual, occupational, and recreational advantages. Then there will be no need for making propaganda to grow more food as we are doing at present. The people will be fully trained on most modern scientific methods to provide food, clothing and shelter to the nation. There will be stability in the country in times of war because the villages will be self-sufficient and self-dependent to a considerable degree.

ALL ROUND NATION BUILDING PROGRAMME

By Swami Vishwanand

IF the country is to be strengthened and reconstructed, it is necessary to push forward the Constructive Programme as laid down by Bapuji, which means, building up of the Rural Economy of the State and giving a Rural bias to the Administration.

Under the present conditions, the greatest need of the Country is to achieve self-sufficiency in food and clothing and any one who will produce food and clothing will be doing real National Service, in addition to various programmes our Government has already undertaken, it is necessary to rouse a 'Back to the Land' consciousness. The villagers who are deserting their lands for the comparatively, but momentarily, easy and profitable living of Factory Labour, should be dissuaded from doing so. The exodus into the cities must stop. Agriculture must be made more attractive. The Government should announce their policy and chalk out a programme in this respect.

Life in the villages is becoming dreary-land is being neglected, villages are slowly getting emptied and exodus into the unhealthy cities and towns is already on the increase. A revolutionary programme of all round development of the villages should be started at once. The psychology to love the land, to love the cattle and the humanity that lives in the villages has to be built up. Cattle farms and the auxiliary help to develop them should be made to come out in abundance.

Khadi production along with other village industries Centres should be started in all Talukas. This will necessitate an announcement of the Government's textile policy. This may take time but there can be no big impediments for starting of the above Centres. Once they are started, the Government should remodel their policy so as to facilitate their full development. It would be helpful to call for the co-operation of the Institutions and individuals who are interested in the Khadi and Village industries Programme.

Education for the all round development of the human personality and suited to the predominantly rural condition of our country has to be taken in hand. Towards this end the Government should announce their policy regarding the introduction of Basic National Education in our State and prepare a scheme to replace the present system by Nai Talim.

In addition to the laudable work our Government have already done in the matter of eradication of Untouchability, it is necessary to plan out a programme for complete abolition of Caste-System as it is practised in Hindu Society to-day. Hindu leaders and others in puplic position should dissociate themselves from all communal organisations and full co-operation and encouragement should be extended to all non-communal, humanitarian organisations. Homes for children and orphans on non-communal lines should be encouraged. Institutions of the Ashram type will have to be encouraged to develop everywhere.

An organisation, preferably of non-officials should be set up to help the Government in the matter of making Prohibition Programme a complete success.

Full and unstinted co-operation should be given to organisations working for the amelioration of the condition of women and more particularly those working in Rural areas.

Nature cure and medical aid (preferably of the indigenous type) should be made available to all nooks and corners of our countryside and inducement offered to these systems of health cure. The Government should keep a strict control and watch over public eating houses and hygienic and healthy diet should be served by them.

Youth have to be organised. Discipline and love of idealism will have to be inculcated. Sevadals, Scout movements and gymnasia must be made to penetrate into all villages. Intoxicating habits in the youth like excessive coffee and tea drinking, smoking, and snuffing should be discouraged. A spirit of Nationalism, a plan for harmonious development of body, mind and spirit of youth, self-reliance and love towards the ideals for which the father of the Nation worked and died will have to be inculcated. Towards this end, youth camps in places abounded by places of natural beauty, games and athletics etc., will have to be organised.

All this presupposes a vision and guidance from our elders and a batch of well-trained, noble youths. Our Governments must give priority to this and prepare schemes. It is the duty of the CONGRESS and its well-wishers to awake to the situation at once. Otherwise the high ideals of the Congress will soon disappear and the hopes of Bapu will merely remain a dream. The youth and the villagers are getting restless. Their energies have not properly been directed and utilised. The people that count must wake up to the situation and stem this tide of self-deterioration as otherwise the future of the country will be doomed, for which state of affairs we will all be held responsible.

We, who are the heirs and inheritors of Bapu's hopes and aspirations, should forget ourself, our desire for power and position and take to the path of service. Only thus could the country be saved and strengthened-Bapu's vision realised-peace and prosperity fostered and the honour of the country upheld as a beacon light to the world.

FOOD PRODUCTION BY MUNICIPALITIES

By DR. C. N. Acharya

IT has been announced by the Government of India that imports of foodstuffs from abroad would be stopped by 1951 and the country should be made self-sufficient in the matter of food grains by that time. The Hon'ble Minister for Agriculture, in the Government of India, has also urged that food production should be placed on a war footing, so that an all-out effort could be organized in which all the concerned parties could put forth their maximum effort.

The experience of the past few years has shown that the problem of food affects mainly the urban population. Inspite of acute food shortage in the country, the rural population, who form more than three fourths of the total population, were never rationed, but were left to shift for themselves as best as they could.

Either due to its vociferous nature, political influence or innate inability to provide its own basic requirements, the urban population has thrown the full weight of its food liability on the Government, who have been importing about Rs. 100-150 crores worth of foodstuffs per year, at heavy loss to the country and sacrifice of valuable sterling and dollar assets abroad. This is obviously unfair to the country as a whole, since the urban population are better educated and more skilled than the rural population and should try to reduce their reliance on imported foodstuffs as much as possible.

This can best be done by organizing a Food Sub-Committee in the Municipal Board of each urban unit, who should find out how best the food requirements of the urban unit can be met by developing agricultural production in the area immediately surrounding the town. Instead of blindly and helplessly looking to the Government to supply the monthly quota of rationed foodgrains, the municipality, as a responsible unit consisting of educated persons, should seek means to provide its own food supply, by taking special interest in developing agricultural production of the surrounding area. For this purpose, the Food Sub-Committee of the Municipal Board should prepare short term and long term plans for increasing food production in the surrounding area, including items such as provision of more wells, more manure and good seed and also introduction of heavy yielding crops such as bananas, potatoes, sweet potatoes, tapioca, vegetables etc. These schemes should be operated with the help of Government loans and subsidies, preferably through multipurpose Cooperative Societies sponsored by the municipality.

If municipalities are to survive in times of stress and danger, they should cultivate a wider outlook of civic responsibility than they are doing at present. We have passed the first stage of civic development when the individual householder extended his interest beyond the four walls of his house into matters relating to cleanliness of the road, drainage, sewage and provision of common amenities like schools, hospitals, shops etc. The municipal horizon should in future, extend beyond the actual municipal limits into a wider circle which can conveniently be called the Municipal Food Area. Though the Municipality may not pay the same daily attention to the outer Food Circle as it does to the inner Municipal Circle, it would be failing in its duty, if it does not through its Food Sub-Committee, prepare and execute its Food plan, incorporating measures for the progressive substitution of locally grown food in place of imported food.

Science tells us that over 75% of the manurial constituents like nitrogen, phosphoric acid and potash injested in the human food is again voided in the excrements like nightsoil and urine. In a Municipal centre with a population of 100,000 the quantity of manurial constituents produced per year may be estimated at about 500 tons of nitrogen, 125 tons of phosphoric acid and 300 tons of potash. If these constituents are again returned to the land in the form of manure, it should be possible to obtain 5, 000 to 6, 000 tons of extra food production in the form of foodgrains, vegetables, potatoes, and fruits which would meet nearly half the requirements of the

this after the first showers of rain have come.

While we know the above facts and realise that more ploughings before the monsoon will lead to a better yield, the Government should come to the aid of the cultivators. An All-Madhya Bharat survey is to be made to find out:—

1. What the total requirements are of iron and steel in order to give the cultivator adequate ploughs and bakhrs. At present he is short of these. It has to be recorded as to how many acres can receive proper seasonal ploughing after the cultivators have received their quota of iron and steel for this purpose. Workshops have to be set up in different centres to manufacture bakhrs and ploughshears for cultivators, if it is found that the village blacksmith cannot cope with the demand. Together with this the cultivator's requirements for axles and wheelrims for bullock-carts have to be met.

2. To make propaganda for mechanical cultivation and to record which cultivator of groups of cultivators wish to have their own tractor and implements. To achieve this, Co-operative Cultivators' Unions have to be organised all over Madhya Bharat on the model of the Harsi Krishak Sangh now working with Dabra as a centre. Depending on the size and capacity of the tractor 8 to 22 acres can be ploughed per day upto a depth of 5 inches. The old belief that the caltivators' holdings are too small for working a tractor must be banned. In Dabra we ploughed with a 60 H. P. tractor in fields of half an acre. However, for economy, fields to be ploughed should be near each other.

3. After having ascertained the total area which will under the new scheme be worked by the cultivators themselves with more implements and with their own new tractors and implements, the Government to buy equipment for handling the remaining area.

It may be argued that once the cultivators hear that Government will do their ploughing, the cultivators will not buy tractors. I doubt this, as now many cultivators like to possess their own tractor, specially when for the initial payment the Government comes to their aid with Takavi loan specially for this purpose.

Tractor Ploughing

The above is all for improving the yield of existing fields. I now have to be more elaborate as regards *Tractor Ploughing under a Government Scheme* as per item No. 3 above. We can divide this under two heads:—

I. Deep Ploughing from 12"-14" deep to eradicate deep-rooted Weeds followed by Harrowing.

The ploughing can be done under a contract with the Central Government with the tractor units available at the centre, preferably in concentrated areas. However, in addition the Madhya Bharat Government can organise to have in certain centres some 60 to 80 H. P. tractors with mould-board or disc ploughs. These can deal with scattered areas.

The follow-up harrowing operations is to be done by the Provincial Government.

II. Harrowing 4" to 5" deep by small 40 H. P. Track-tractor or 26-40 H. P. wheel tractor which draw Harrows 6' to 10' wide.

This is to be done in fairly clean lands which cannot be ploughed by

ordinary bullock power or to be organised-cultivators-Tractor Owners. There should be atleast 2 harrowing operations before the monsoon and depending on the condition of the soil one or two harrowing after the rainy season but before sowing time. An *extra* Tractor operation in addition to the two above is the *Bunding of fields*.

Specially in the undulation wheat country in Malwa I observed that in the rainy season much of the precious top soil is washed away. Also erosion in these lands is in many places serious on the edges of the lower fields. We can thus prevent this and at the same time these bunds help considerably for conservation of moisture where dry farming is practised.

This bunding of the fields is thus of great importance and to make these bunds tractors and specially designed implements will come to the aid of the cultivators.

Cost

Assuming Government will adopt a two year plan for the whole existing wheat area (13 lakhs acres) then a survey is to be made now from convenient centres of 6½ lakh acres, following the suggestions, as enumerated above. When all the figures are compiled then advice can be given about organisation, choice of tractors and implements, capital cost and running cost.

Where cost is concerned we should in the case of ploughing (which is more or less reclaiming of land) debit the Government. The expenses for this come back in due course in the shape of land revenue.

As regards harrowing with tractors this should be debited to the cultivators to be recovered within two years. The same to be done for *bunding*.

Whether the cost is to be recovered in cash or kind is a question which can be decided in consultation with the cultivators. Recovery can be made in 2 years through Revenue Department or by levy of grain. To give an idea of the *extra* income which can be reasonably expected with the methods of cultivation as recommended in this note we may assume safely an average extra 6 maunds per acre or for 6½ lakh of acres 39,00000 mds. with a value of Rs. 4,68,00000/-.

For the price per maund I have taken a conservative rate of Rs. 15/-.

Manuring of Wheat Fields

We have dealt with the best possible way of tilling the soil. Now we will consider how best to bring back fertility to the soil.

Again we must observe general backwardness, well-known to every body in contact with cultivators in India. Burning for household use of precious cowdung is not a matter which can be eradicated overnight. So what to do instead? The answer is simple. We must educate all cultivators to use their own resources for producing manure locally, and when this is deficit to help him with other manures prefarebly indigenous, and add imported fertiliser where we are short.

Acreage to be Manured

We are dealing in our first year with 6½ lakhs of acres and we wish to manure all this area under the new drive of 'Grow More Food'.

WHAT are the resources?

1. There is a vast quantity of *manure* available for the fields *in*

municipal population of 100,000 (calculated at 12 oz. per head per day).

In view of the imperative and urgent need to make the urban areas as much self-dependent as possible in the matter of food supply, there is good justification for government to frame rules compelling municipalities to conserve and utilize the whole quantity of katchra, sewage, sullage, nightsoil and other waste products like slaughter house refuse, mill and trade wastes etc.for increasing agricultural production. By providing more wells and better seeds, simultaneously with the above drive for increased manure application and by encouraging the growth of heavy yielding crops, it should be possible for the municipality to produce all its food requirements within a few mile radius of its city. A population of 100,000 requires, at the rate of 3/4 lb. per head per day, about 12,000 tons of foodstuffs per year. By intensive cultivation, taking 2 crops per year, it should be possible to obtain 2 tons of foodstuffs per acre, which means that 6,000 acres of intensively cultivated land should be sufficient to feed the whole town. Simple calculation tells that within a radius of 3 miles round the city there is a total area of over 18,000 acres. The Municipality should treat the outer area within 5 miles radius as its Municipal Food Area and make it a garden of intensive cultivation which would provide food for its human population and fodder for its cattle population. We need not then go abegging to far off Argentina or to Canada or Australia to satisfy our hunger, nor fear transport bottlenecks in obtaining necessary food requirements from adjoining provinces.

Progress on the above lines would be facilitated by a coordinated effort between the municipality on the one hand and by other concerned organizations like multipurpose cooperative societies and the Agricultural Department. From the national stand-point of food self-sufficiency, there is a clear case for compulsory action in the matter by all municipalities, through properly framed legislation, which would fix the responsibility on the municipalities to frame and put up to Government suitable schemes for establishing intensive Food-production areas round about their urban areas.

INCREASED FOOD-PRODUCTION BY EDUCATING THE CULTIVATORS *

By **D. H. Duyf** (Dabra, Gwalior)

ACCORDING to the latest statistics Madhya Bharat is the 4th largest wheat growing Province of India, after U. P., East Punjab and C.P. With an acreage of 13,28,000, its wheat area is 7.2 % of the total wheat area in India, being 184,13,000 acres. At present the yields are very poor, but of old the graneries of the Malwa Plateau were well known and with modern science at the disposal of the cultivators I see now no reason why Madhya Bharat, the Province of modern India

* Note:— This article deals with proposed methods of improved food-crop cultivation in Madhya Bharat, but it may find application in many other areas o fIndia.

should not become again the granery of India in its present plight of food shortage.

Government officials and Agricultural experts in this country have analysed on many occasions as to why there is no so much shortage of food. I may give as quite a considerable reason the fact that the rural population is eating more, not only that, many cultivators and their families have switched over from eating Jawar and Bajra to the consumption of wheat. At the same time he is inclined to hoard more in anticipation of better prices. The fact that the cultivator eats more is a happy sign, as it means that the days in which the moneylender sucked the last grain from the cultivator, are over. The cultivator and his family become thus more independent from the Sahukar. A simple calculation will result to show how much less foodgrains come to the market when millions of cultivators are eating more.

Improve the Yield of Existing Fields

The programme for improving the yield in the existing fields must be conducted in such a way that it comprises in a two-year plan all the 13 lakh acres of Madhya Bharat. The target should be that the yield in all these acres is doubled by crop 1951.

The target may sound a bit rigid and high but it ought to be done. I just quote from practical experience, that for instance in Harsi Irrigated area in Gwalior Prant the average yield is 6 maunds per acre. I have observed only a few fields which give 8 to 9 maunds per acre, but these are very few indeed. Against this our Agri. Co. with the help of tractors and manure, but using the same seed as the cultivators, got in their wheat fields 15 maunds per acre by just following the simple ABC of agriculture operations. I am convinced that in non-irrigated areas also a double yield from the present can be obtained by simple methods, but with Government and expert help as I will describe later.

While influencing the cultivator to make an all-out bid to maximise food production it is most essential to guide him in a scheme which is easily acceptable to him. We all know that he is very conservative to say the least, but once we prove to him practically that he will get more yield and income, he will become our best ally. At the same time Government must see to it that not too much money is spent and that the cultivator becomes not more lazy because Government takes over with modern means much of the work which normally the cultivator and his family would do in their fields.

Wheat Growing In Non-Irrigated Areas

Summer ploughing, that is the ploughing of the wheat land after sowing but before the monsoon, is done very haphazardly by the cultivator in Madhya Bharat. The reason is that the holding per head of population is large and that for a long time after harvest the cultivator is busy with harvesting and thrashing operations. Even after this is ready, the extreme heat and often his social customs (Marriages etc.) do not bring him to the land to plough the top-soil to further fertility. Also weak bullocks and implements not readily available are a handicap to him. The result is that he gets hardly one ploughing in and preferably dose

the villages. My experience is that in Gwalior Prant every 3 years the cultivator puts 8 to 10 cartloads of about 80 mds. of this manure, mostly cowdung in his field. The quantity available depends largely on the quantity of livestock in the village.

2. The village manure can be considerably improved and increased if proper ***composting*** of all that can serve as manure is done. We thus can double easily the local resources provided proper guidance of experts is provided. Even the weeds of the fields of the ryots must be composted. We have to teach them how to do this, and make the headman or the Panchayat of every village responsible that compost making is executed properly. Every village must have its compost pits and checking up to be done from different centres. I just may add that for the coming Rabi crop, the compost scheme must be started forthwith.

3 In addition to the above compost there is to-day a vast quantity of well ***composted town refuse*** and sewage available in different towns of Madhya Bharat. I have tested this manure in our Farms and find it excellent. It is only a question of transport to make this manure available to the cultivators and they will gladly pay for it. An organisation has to be set up for transporting this manure. I am sure the co-operation of Municipal authorities is willingly given.

4. ***Manure and Fertility***: There are several kinds available in India which have been successfully tested in our Farms in Dabra, i. e.

Groundnut cake	7 % N.
Castorcake	4 % N.
Mohwacake	3 % N.
Bonemeal	3 % N.

In addition there is sulphate of ammonia (21 % N) from imports, which I never advise to issue as such to the cultivators but in mixture. The reason is in the first place after he has received it at concession rate, some may be tempted to re-sell it at full rate. Secondly, he may over dose it in his field and harm his crop. In the later case the propaganda value of this manure is reduced to nil.

Manure Dose

We continue to assume that the total area to manure is in the 1st year of real 'Grow-more-food-campaign' in Madhya Bharat the target is to manure 6½ lakhs of acres. Of this we can roughly assume that about half the total area will be manured by:—

a. Ready village manure
b. Village compost
c. Town-compost

I further assume that approximately the other half i. e. 3.25 lakh acres is to be manured by other fertilisers or manure and for this I advise to apply the following manure-mixture.

8 parts groundnut cake
1 ,, bonemeal
1 ,, sulphate of ammonia

This is to be given at the rate of 40 lbs. nitrogen per acre worked out as follows:—

500 lbs. of mixture to be applied in one acre will give 10 lbs. of nitrogen per acre as follows:—

G. N. Cake.	400 lbs. – 28. 2 lbs.	N.
S. Ammonia.	50 lbs. – 10. 3 ,,	N.
Bonemeal.	50 lbs. – 1. 5 ,,	N.
	Total. 40.– lbs.	N.

Cost per lb. of nitrogen is about -/15/7 to which we may add one anna for mixture and distribution charges.

The quantity of total mixture per acre is 500 lbs. (or, 6½. mds.) i.e.

5 mds. groundnut cake.
25 seers sulphate of ammonia.
25 seers bonemeal.

The total requirements for providing the above mixture and the cost works out as follows:—

	%N.	Tons.	Rate.	Cost.
G. N. Cake.	7.05	58,035.75	Rs. 160/-	Rs. 92, 85, 720
Sulphate of Ammonia.	20.6	7,254	Rs. 330/-	Rs. 23. 93, 985
Bonemeal.	3	7,254	Rs. 100/-	Rs. 7. 25. 450
			Total cost of manure.	124, 05, 155

It means a total bulk of 72545 tons of manure, which has to be produced, admixture to be made and to be distributed.

A proper survey has to be made specially for groundnut cake and bonemeal. Sulphate of Ammonia can be obtained from imports (and later from the Sindri Plant) through Central Government.

Groundnut cake is available in small quantities from oil-mills in Madhya Bharat and it is essential that by a control order the price is brought down from the present at Rs. 200/- per ton to Rs. 160/- per ton. The balance is to be procured from other provinces with the help of the Central Government.

Bonemeal is also a manure and plants have to be set up for steaming treatment to make this.

The admixture can be done in different centres when the groundnut cake is to be crushed. Contracts can be given for this work or Government can do it under its own management.

In the rainy season when the tractors are idle these can drive with pulley attachment the disintegrators. We do the same in Dabra and it works well.

If at all the quantities of different types of manure are not available, then we can make changes in the flexible mixture-formula, for instance increase the proportion of Sulphate of Ammonia and decrease groundnut or substitute part of the groundnut cake for mohwa-cake or castor-cake. This can be decided after the resources have been investigated.

It should be kept in view that we in the above deal only with 3.25 lakhs of acres, while the ultimate target is much more.

Green Manure

This has been practised in Dabra with Sun-hemp (Sanai). 20 seers of seed is sown per acre in the first rain and the crop of sanai is ploughed in after 5 or 6 weeks and left to rot. If buried properly it gives about 55 lbs. of Nitrogen to the soil.

I find however that in the monsoon the tractors and implements go in the wet black cotton soil and the only way out would be to cut it and bury by hand. This is rather cumbersome, but by all means experiment can be laid out.

Sowing Time

I have observed that in 1948 area under wheat in Madhya Bharat was 15.6 lakhs acres while it has been reduced to 13.25 acres in 1949. This is very considerable.One of the reasons is that because of the prolonged rains sowing in many fields could not be done in time.

Naturally the cultivator more than anybody else depends very much on the weather, but a reduction of 2.35 lakhs acres within one year is very serious indeed in times when the wheat prices are extremely high and the foodgrains are

so much needed. I believe that another reason is that many fields were infested with deep rooted weeds like kans grass which the cultivators could not eradicate in time. Therefore, I recommended earlier in my report the deep-ploughing.

It is essential that cultivators are educated by the officials concerned for the importance of timely sowing. This in itself will give also a great saving in the quantity of seed to be used.

Seed

There are many good varieties of seed being used in Madhya Bharat and we should be cautious when proposing to change the variety. However, every time I would advocate a variety which is most resistant against rust-disease. Early planting (i.e. before November 1st) will help to prevent rust.

It can be easily found out as to in which districts the best grain is produced and an organisation has to be set up to reserve it and distribute it to the maximum.

In Dabra area the nomenclature of the original seed varieties has gone into oblivion and commonly we hear of Pisia and Kathia. There are, however, some newer varieties as Punjab 553 and 591 which give good results.

There is no doubt about it that the cultivators will welcome to receive from the Government at a fixed rate a good seed variety and in every District experimental plots should be laid out for observation and multiplication of the newest varieties.

Together with this each district or rather Pargana must have seed stores and organise distribution on the pattern as already established in other provinces.

Seed Rate

I find the seed rate used specially in Dabra area is much too high and after verifying this with experiments on our Dabra Farms we found that the cultivators' seed rate of 1½ mds. per acre can be conveniently brought down to 30 seers per acre.

A considerable saving thus can be made, which goes into big figures if we assume that the excess seed in 13 lakhs acres would amount to approximately 9.7 lakhs maunds. Just imagine how many more people can be fed on this simple saving of seed-grain in Madhya Bharat Province only.

For using minimum seed it is essential that sowing is done in the proper time to ensure maximum germination and tilling.

Mixed Sowing

The sowing of wheat with other crops like gram etc. should be abolished. It never does justice to either crop.

Cost and Yield

The figures are very clearly indicating how poor the yield of the cultivator is and how this can be improved by simple means from 6 mds. per acre to 15 mds. per acre.

Our target for doubling the yield of the cultivator is therefore not too high. It can be done in our irrigated areas but also in all the non-irrigated areas, provided bunding and other recommendations as above are followed up.

Other Foodgrains

As our experience with improving wheat crops has been tested practically for many years, I could elaborately give

my recommendations. As regards other crops experiments with better seed and manure are in progress.

We recently started importing new paddy-varieties and may give very soon our local experience for the benefit of the cultivators. Further we are going to lay out small plots with sweet potatoes.

However, for Kharif and Rabi crops alike the general recommendations for ploughing, seed, sowing time and manuring hold good. The main thing is to guide and help the cultivator with all possible means. While educating him to better the standard of living and crops we should go all out to achieve this in the shortest possible time.

Increase Of Food Grain Lands

In Madhya Bharat large areas are lying waste which can be brought under the plough. Before going in for wholesale ploughing of large barren area, it should be ascertained:—

1. Which of the areas will ba taken up by cultivators or by colonisation of people from other provinces.

2. Which areas should be handed over to big Farmers who are prepared to do cultivation from beginning to end mechanically.

Mechanical Farming

This depends much on initiative, capital, timely availability of Tractors and implements and expert knowledge.

In these days while the prices of Farm produce are high, mechanical Farming is a paying proposition, but it is so very new to India, and many difficulties have to be overcome. Also when the prices drop the cost price must be reduced by efficient management. Even when equipment is available, large scale training of drivers, mechanics and expert staff is to be undertaken.

However in a thinly populated area like Madhya Bharat it is imperative that mechanical Farming is done.

For instance in Harsi area, where so much land is still barren and where every year there is about 4000 million cft. of stored water surplus, chances of success may be the best and I am considering to work out an all mechanised pilot scheme for this area for mechanical cultivation of food crops.

Conclusion

It cannot be sufficiently emphasised how great the importance is of an all-out drive for increased food production. To achieve this the right spirit has to prevail from top to bottom in all departments concerned with our present campaign. Everybody in the drive has to become a 'Kastakar' and specially those who have the energy and knowledge must go all out to guide the millions of cultivators to become better farmers. At this juncture our Government has not yet got the funds and resources to spend very much money to undertake on a large scale extensive mechanical farming. Therefore, let us all first make a bid to improve the existing yield and what is more, make the cultivators better growers, increase their standard of living and make them happier citizens in the land of plenty. In this way only *immediate* results for more food production can be expected.

Nobody should doubt that it can be done, the low yields of the land to-day are obviously open for immediate improvement. All what I have written is based on practical experience of many years amongst the cultivators of India and the

above recommendations can be executed for the coming Rabi crop, except for the summer ploughing and bunding.

I suggest that at the time of sowing and manuring the staff of the Agricultural Departments are temporarily augmented by a whole army of volunteers from Agricultural colleges and schools. Give the students a briefing course and the facilities to have in every field of India contact with the Kastakar or cultivator to induce him to 'Grow More Food'. This will work as an education both ways. What "Operation Normandie" meant for the Western allies in the last war "Operation Food" is imperative to-day for India.

THE AGRICULTURAL EXTENSION SERVICE IN THE UNITED STATES

By **Henry W. Spielman,**

American Agriculture Consul, Bombay

THE agricultural extension service in the United States was developed to fill the need of informing cultivators of the latest findings of the agricultural experiment stations. Supplying information to cultivators is a form of education; consequently, this activity was made a responsibility of the state agricultural colleges.

When it was first started, the extension service planned for adult education but it was later found that work with children could also be effective. To do the job thoroughly two branches have been organized in the county offices as well as in the state and national offices. The adult work in most counties is under the direction of the county agent. The work with children is under a club leader for 4-H Clubs. In many counties there are four workers, two men and two women. The younger man and woman work with the boys and girls.

Idea is to Keep Farmers Informed

The teaching techniques are similar for all four. The main idea is to keep the farming community informed of the improved methods of farm working and living discovered through all types of experiments. And what is more important, the educational programme must do more than inform. It must get action. Results are what count.

To get results, to be sure the cultivators do use the improved methods, the cultivators must be "sold" on the improvements. They must be convinced that the new methods will bring some benefit to themselves.

Here is an example. A senior county agent decides that the best way to improve farming conditions in his district is for the cultivators to improve their farming methods. After studying his district, he will decide what methods are best suited to the conditions in his district. His study will probably begin with the soil. Will soil conservation methods be necessary to prevent soil erosion and to conserve water? Will it be necessary to build terraces? Or will strip cropping be sufficient?

Has the nearby experiment station or demonstration farm discovered a width of row that will give better results than the standard width in general use? How far apart should the plants be in the row to obtain the maximum yields over a period of years! Are there improved seed which will give higher yields?

Improvements Taught to Cultivators

After the county agent has considered these questions and perhaps many others he will draw up his programme for teaching the cultivators his findings. If it is his first programme in the district, he will assume the cultivators know nothing about the improvements which he will recommend. He must prepare his programme down to the last detail. He will then send notices of meetings to be held in the various villages where he intends to make his programme effective. On the day he holds his first meeting he will arrive early to talk with some of the local leaders and arrange for the exact meeting place. His talk will be illustrated with charts and pictures showing what he hopes to accomplish and the methods for accomplishing it. If there are local facilities he will show films to further illustrate his ideas. After he has presented his programme he hopes one or more cultivators will volunteer to try these recommended practices.

This volunteer will be called a demonstrator and will work under the direction of the county agent. After all, he is a student learning how to do something new. He must rely upon his teacher who has more knowledge about the new techniques of farming. Some of the cultivators' methods will be sound and will be retained, others modified, while others may be changed altogether.

The county agent will visit the demonstrator's land to make a detailed study. If the land is suffering from erosion, either gully or sheet, means for checking it will be devised. Terraces may be built to slow the rate at which the water runs off the land. If terraces are built the land must be farmed on the contour so as further to check the flow of water. In areas of low rainfall, similar to the Deccan, these measures will permit the water to soak into the subsoil where it can be used by deep-rooted plants and may even raise the water level in the wells in the community.

Best Rotation Crops Decided

The cropping system will be studied to see what rotation of crops would yield the highest return year in and year out. Perhaps the rotation would be jowar, cotton and peanuts. If the important thing is to raise more jowar, then the plan will be designed to receive the highest yield of this crop with minimum emphasis upon the other two crops. At the same time it will not eliminate the other two. After all, soil responds better if different types of crops are grown. One type of plant like jowar which has a fibrous root system uses only the top part of the soil. Cotton, which has a deep tap root, goes deep, while the roots of peanuts come in between. These crops draw food from different areas of the soil.

If all of these crops are grown during the monsoon season, may be it will be possible to grow a green manure crop during the winter months. A green manure crop is grown to enrich the soil and not to yield a return, even as animal food. Green manures come nearest to nature's method of improving the soil. They generally add nitrogen as well as humus to the soil. Most soils, which have been farmed for

many years are low in humus, such as the farms in the southern part of the United States. The soils may also be deficient in other plant foods and means must be found to add them.

A time schedule is prepared so that the cultivator can plough his land and plant his crops at just the right time. This may be better known by the cultivator. But farming is a business and should be run on business lines to get the best results. Perhaps the demonstrator may never have actually planned his programme before and at harvest time is surprised at the results of such planning.

This detailed planning continues through all of the farm operations, including the seed to be used, where it will be obtained, the types of equipment to use, and continues up to harvesting, thrashing, and storage of the grain. In recent years the county agent has also recommended improved marketing methods.

Frequent Visits Paid by Agent

At various times during the year the county agent will visit his student-demonstrator to help him with problems that may arise. A grasshopper outbreak may occur and the county agent will make recommendations to prevent this pest from destroying the cultivator's crop.

While the county agent is working with his demonstrators in the various villages, he will take pictures of the improved work. At harvest time he will take further pictures to show how the improved methods yielded higher outturn per acre. He will use these illustrations in his series of talks to cultivators the following year.

At harvest time he will hold a field day when many of the demonstrator's neighbours will attend the harvest to see for themselves the results of the improved practices. If the county agent has been a successful teacher, his student will have well demonstrated the usefulness of the results of the work of the experiment stations.

In most counties in the United States there are county and even local fairs where the cultivators of the area take their finest products to display them for the general public and also to compete with other cultivators for having the highest quality products in the area. These fairs do much to stimulate interest in better quality products. After all the quality product may also be the highest yielder.

The Home Demonstration Agent

The county agent in the United States works with the adult farmer. The home demonstration agent works with the farm women. Her job is to improve the diet and quality of living of farm women.

One of her first jobs is to illustrate to the farmer's wife new methods of preparing foods to which the family is accustomed. She may demonstrate how to make the foods more tasty and to add variety in their preparation. But more important she will show the farm wife how to preserve the minerals and vitamins in the foods.

Many farm families in the United States do not eat a balanced diet. Perhaps they eat too many starches. The home demonstration agent will show the farm wife how to prepare a balanced meal. Frequently, the farm woman must plant a garden in order to include more fresh vegetables, tubers and fresh fruits in her family meal. During the war it was

found that oilseed cakes, like groundnut, were an excellent source of protein and oils which the body needs. Methods were developed for preparing these former by-products of industry into delicious dishes.

The home agent also demonstrates methods of preserving fruits and vegetables os that the families can use them for a longer period of time. The greater the variety in the diet, the less emphasis upon one particular type of food.

At these demonstration meetings, the farm women will help with the food preparation and later eat the food themselves. Then they know whether the new methods are an improvement upon the methods they have been using in the past.

The home agent may also illustrate to the farm women how to buy better clothing, not only for themselves but for the entire family. She will show the different types of cloth on the market and which are of the better quality. If the farm women make all or part of their clothing, the home agent will show them the shortcuts to making more attractive clothing as well as those of better quality.

The home agent lives up to her name in even a more homey way. She will help the farm wife to make her home a more attractive place in which to live. The home agent will study the local conditions and through group discussions with the farm women help work out plans for making the individual dwellings lighter, brighter, cleaner and affording more protection from the weather.

Thus the Agricultural Extension Service attempts to improve living conditions on farms as well as seeking to help the cultivator increase his farm production. The job is not easy. When the service was first started in the United States there was much opposition to it. Farmers the world over are conservative. They must be shown that a new method of performing a farm operation will bring results. Although Americans are given credit for accepting new ideas quickly, the American farmer refused to accept them until he was convinced that by changing he could gain something.

The service is nearly 50 years old. Through slow hard work the county agents and their assistants have obtained results. This year the American farmer is producing one of the largest wheat crops on record. He could not have done this unless he had used the methods discovered by the agricultural experiment stations and shown him by the Extension Service.

--American Newsfile Supplement

Bombay Premier's Appeal to the Youth to Help Food Production Campaign

"I consider this to be an excellent opportunity for all young men and women irrespective of their political or other ideologies, to bend their energies to this most urgent task of 'Food Production' before the country. Besides obtaining the satisfaction of having contributed to the country's effort to produce more food by doing actual physical work, they will also come in direct contact with conditions in the villages, which would enable them to offer to Government and to its executive officers more constructive suggestions for improving the present Grow More Food Schemes."

SEED FACTOR IN POTATO PRODUCTION IN INDIA

By S. L. Kapoor

OF all food crops in the world, *potatoes are the most abundantly* produced and their production is estimated at 6,010 million maunds being almost twice as much as that of wheat and three times as much as that of rice. And today in many countries where wheat is a precarious crop, potato growing has become a highly developed industry.

India's share in the world acreage and production is rather poor and is estimated at less than one per cent in each case. The area is 449,000 acres and production 49,103,000 maunds annually.* The crop is, however, gaining importance and although comparatively unknown a century ago, it is now perhaps the most widely cultivated of all the vegetables and is grown to a small or a large extent in all the parts. The acreage is showing an upward trend and in the country as a whole an increase of 49,000 acres is reported in the period 1930-31 to 1938-39. In Bengal the area has risen from 61,000 in 1930-31 to 88,000 acres in 1938-39; this gives an increase of 45 per cent. In Bombay the expansion has been considerable and in the Poona district alone the area has extended from 6,000 acres in 1914-15 to 17,000 acres in 1938-39. The Punjab province has likewise recorded an addition of over 20 per cent in the period 1930-31 to 1934-35.

Indian Supplies Inadequate

India produces annually 49,103,000 maunds of potatoes but the consumption is much higher and in order to meet the demand she was importing before the war on an average 1,156,000maunds of potatoes. The imports have shown a steady increase; the quantity imported in 1935-36 was 968,000 maunds and it increased to 1,193,000 maunds in 1938-39. The major sources of supply are Burma, Italy and Kenya Colony with 73.5,19.6 and 5.5 per cent share of the total annual imports respectively. From Burma the supply increased from 352,000 maunds to 819,000 maunds in the period 1924-25 to 1938-39 i. e., an increase of 133 per cent. The imports from Kenya Colony have also shown a considerable increase; in 1925-26 they were valued at Rs. 26,000 and in 1938-39 at Rs. 454,000. The exports from India, on the other hand, are small owing to great demand within the country and the quantity exported in 1938-39 amounted to approximately 94,000 maunds.

Need for Increased Production

Acreage under potato has expanded appreciably and annual production has gone up. The imports have shown a steady increase. The export position, on the other hand, has remained practically unchanged. All this tends to show that there is a keen demand for potatoes and that there is a need for increased production.

India's annual imports of potatoes before the war are valued at Rs. 33 lakhs. Imports of 119,000 maunds of farina and potato flour are charged at Rs. 673,000 Other starches are estimated at 335,000

* In India statistics regarding acreage and production of potato are not maintained separately. In official publications, potato is classed under the common head 'Fruits and vegetables including root crops'. The data on acreage and yields have been largely drawn from the "Report on the Marketing of Potatoes in India and Burma 1941, issued by the Agricultural Marketing Adviser to the Government of India."

maunds. In order to lift this burden from the national treasury, India has to be made self-sufficient.

Besides human consumption and the manufacture of starch, potato is being put to a variety of industrial uses in other countries. The manufacture of alcohol is a very large industry in Germany and apart from the recovery of alcohol, the distillary residue forms a good ration for the livestock. Dried potatoes is another important product and Germany has set up a large number of drying installations. During the war a few factories have been installed in India as well. Potato is employed elsewhere in the preparation of dextrin and glucose also and is being widely used as a cattle feed. The manufacture of farina, alcohol, dried potatoes, dextrin and glucose offer a big scope for further extension of potato cultivation and it is estimated that if the entire demand of farina and potato flour, for instance, is to be met from within, there is a need for increasing the acreage by 10,000 acres.

Further, India is faced with a grim food shortage. There is a deficit of 4.5 million tons. We have to meet a bill to the tune of 150 crores of rupees. And all this for rationing the people. The Government has, therefore, put a datum line–no imports after the year 1951. The next two years are thus critical. India is to be made self-sufficient. In this drive an essential place is assigned to the subsidiary foods where potato features prominently and rightly so since an acre under potatoes produces 100 maunds of food while an acre under wheat yields about 10 maunds only. Even after allowing for the extra moisture in potato, the food output per acre far exceeds that of wheat or any other food grain. Potato, therefore, awaits a large scale expansion.

Seed a Limiting Factor

But unfortunately our seed situation is not sound.

India has two distinct areas for the cultivation of potatoes, hills and plains. The seed problem in hills presents no difficulties; the individual cultivator sets apart the necessary amount and uses it in the next season. Temperature being low storage rots are negligible.

The supply of seed in plains is not so simple. Soon after the harvest, temperature begins to rise. Summer is hot and long. Storage losses are heavy, between 50 to 65 per cent, in certain cases as high as 60 to 80 per cent and sometimes the entire quantity is lost. The seed requirement of plains is derived from three sources, viz., locally from plains, supply from hills and imports from abroad. The maximum share is contributed by the local seed of plains, Bihar alone contributing 1, 730, 000 maunds which amounts to nearly 50 percent of the entire need of the country. The United Provinces and Bengal also make large supplies. Next in quantity is the seed stock from hills and the important sources are Simla, Kumaon, Darjeeling, Khasi and Jaintia hills. Foreign imports amount to 1,33,000 maunds with 82,000 maunds from Italy, 50, 000 maunds from Burma and 1,300 maunds from Kenya Colony.

The great bulk of seed is, however, drawn from the plains and is sold at a premium that covers all losses in storages, interest on capital, cost of labour and expenditure on the storage materials. The prices soar high and unfortunately of a total of 4,49,000 acres under potatoes, 4,04,000 acres are present on plains and only 45,000 acres on hills.

Peace time prices which were considered high enough to limit potato

planned to help industrial development by all possible means. The Industrial Finance Corporation is an example. Such concrete steps in financing cottage industries is a desideratum. In fact it should be one of the objects of Finance Corporation, either central or provincial, to extend its helping hand to the village industries. Though a separate financing organisation for cottage crafts on provincial basis would appear to be a sound proposal, in our present economic structure it should preferably be a part of Finance Corporation. Dovetailing them calls for diligence on the part of the Government and the people.

However, the problem can not be solved unless all the help anticipated from finance corporation is properly distributed and utilised. No one would like to hand-over the same to individual craftsman. The only agency to bank upon is cooperative society. It should be a multipurpose society where all business as purchase of raw-materials, utilisation of improved tools and technique and the sale of finished products should be undertaken. Let it be a 'friend in need' of the village craftsmen.

The growing interest of the Congress Ministries in the revival of cottage-industries brought some Acts into existence for the financial help to the prospective village craft. State Aid to Industries Act has been passed in Assam, Bengal, Central Provinces and Berar, Bihar and Orissa. Bombay has rules framed to help the cottage crafts. Madras passed Cottage Industries Loans Act whereby loans upto Rs. 500/- can be obtained from the Collector for starting cottage-industries coming under the economic sphere of the province. In spite of the presence of these enactments they have little at their credit. The reasons are not far to seek. It is not the finance which is important but how the dose is administered. Instances can be multiplied when the help under the Act was furtively used for other unproductive purposes. The need of the hour is to see that the help obtainable from the state is solely used for the productive work and cooperation alone can help us. It should be a condition precedent to the application for financial aid under the Act, that the applicant craftsman must be a member of co-operative organisation for that area. The Government should better hand over the amount for help to the co-operative society which will disburse it into smaller instalments after due examination of the craft from time to time. This will ensure the use of state help in right direction and steady development of the industry.

In short, co-operation is a field for manifold activities directed towards lifting up the cottage industries from their present economic plight. It is a tried 'Penicillin' in other parts of the world and we cannot connive at it especially today, when our village craftsmen are illiterate, poor and conservative, not to allow any revolutionary change in our social system.

PROHIBITION AND AMELIORATION *

By: O. Mohanasundaram

The Co-Related Projects

PROHIBITION AND AMELIORATION should be recognised as correlated projects. They can succeed only together but never alone. Prohibition is acknowledged as the greatest single ameliorative measure that can redeem the masses of our country from poverty, squalor and sub-human existence. But without scientific welfare and ameliorative measures to improve the conditions in which the masses live and work, it is impossible for the mere law of Prohibition to succeed. In the same way, without the Law of Prohibition, any amount of 'temperance' work, 'uplift' and 'reconstruction' programme will be a mere make-belief and ineffective. It will be like stocking water in a leaking reservoir.

India will Succeed

If any country in the world can succeed, it is India, with its hoary past, religious background, and with the vitality of civilization of 3,000 years and more. India has the right to set the trail in the spiritual salvation of humanity. India has a greater chance than any other nation to succeed in this great humanitarian social and moral reform. Drinking is a social stigma in our country. It is not a social obligation, except in some anglicised urban circles. Even the worst drunkard stealthily steals into the tavern without being noticed by decent fellowmen. The picture in cosmopolitan cities where there is so much aping of the Western Civilization, may mislead us. The social control, especially in our villages, is still of the highest order, though it has suffered considerable disintegration due to the foreign rule, the impact of wars and the denationalising type of education. Prohibition is just an attempt to make man human and more human. The law of Prohibition commends itself to the public opinion in India, more than in any other country.

All religinos and Public Opinion Favour the Reform

India is a land of religions. We are rich in a wide diversity of faiths. But all religions converge in the common ethics and codes of living. We can draw inspiration and guidance from accumulated wisdom of the ages past, submit them to the scientific quest of the present day civilization and plan out a great future for our country, glorions than the past. All religions, scriptures, all great and thinking men of the past and the leaders of the present and the general mass of public opinion have condemned 'drink' and blessed Prohibition in the name and salvation of humanity.

Gandhiji's Constructive Programme

Gandhiji, the Architect of our Freedom, had been preparing the country to shoulder the responsibilities of freedom, even while the fight for freedom was on. He was laying the foundation for the soical and economic freedom of the masses through his comprehensive constructive programme, even as the political

* A paper presented at the All India Conference of Social Work, Madras Session, December, 1948.

cultivation increased to prohibitive index during the war. The condition is no better even today. Seed potato was available in the Benares market in 1939 between Rs. 10/- and Rs. 12/- per maund. In the period of war and after, it has been selling at Rs. 30/- to Rs. 50/- per maund. Apart from high cost, many areas suffered for want of seed. War time transport conditions and wagon shortage often resulted in awkward delays. It was not uncommon to receive the consignments from hills in a spoilt condition and too late for the planting season. The war resulted in completely closing down of what were previously large shipments of seed from foreign countries. The Bombay Presidency which depended to a large measure on seed imported from Italy was suddenly thrown upon the home resources. The World War I had similar repercussions and the area in Bombay went down considerably; in Poona district it contracted from 6,000 acres in 1914-15 to 2,300 acres in 1918-19.

The Problem

Such is the magnitude of seed problem in India. There is no dearth of land suitable for potato production. The main problem to be tackled is the high cost of cultivation of which the cash outlay on seed easily constitutes more than half. Low yields and high cost of production rule out the scope of using potato as a raw material for the manufacture of farina or other industrial products. And with the expenditure on seed remaining as such, it is equally doubtful if the Indian ryot will agree to any further extension — nay even maintain the existing acreage and whether potato can help easing the present stress of food crisis which it has so often done in countries of the West.

The cultivation and further expansion is, therefore, linked with a timely and a cheap supply of seed. Improvement is possible in the following directions:-

1. Increase of acreage in hills:- Acreage under potato on hills may be increased so that larger supplies of seed are available for sowing on the plains.

2. Arrangement for cold storage:- The rotting of potatoes and losses that occur during storage on plains is due to high temperature. This can be substantially reduced by installing more cold storage houses and storing potatoes at low temperature.

3. Possibility of reducing seed rate:- The cost on seed varies with the size of seed tuber and the amount of seed sown per acre. Experiments carried out in this direction at the Benares Hindu University have shown that there is a scope for reducing the expenditure on seed and lowering the cost of production of potatoes. It has been found that (i) yield is directly related with the size of seed piece and the amount of seed rate under low manuring, and (ii) the size of seed proves of little consequence in determining yield under condition of rich manuring. There being a wide difference in the cost of manure and seed it is found possible to decrease the cost of production by using small seed tuber and heavy manuring. A yield of 150.39 maunds giving a net profit of Rs. 457/17/- per acre has been obtained under the following cultural combination:-

Size of seed piece: 5 gm. ; distance between hills : 8 inches; distance between rows: 2 ft.; rate of manuring: 500 maunds of cow dung manure plus 200 lbs. of ammonium sulphate per acre; other cultural operations as usual. The quantity of seed potatoes required for sowing one acre amounted to 4.39 maunds.

COOPERATIVE FINANCE FOR RURAL INDUSTRIES

By Prof. M. G. Bokre

To say that Indian agriculture is a gamble in rains, it can not provide a farmer full work for the whole year and those engaged in it are badly in need of subsidiary occupations is to state a trite proposition. When we analyse the reasons why village industries are slowly declining, here again as elsewhere the problem of finance obtrudes.

At present the main sources of finance to the village craftsmen are the 'Sawkar', 'Karkhandar' or the Cooperative Society. But the field covered by the last institute is negligible and today the first two dominate to the detriment of the craftsman. Borrowing from saokar or the Karkhandar in the absence of state help may appear to be natural as loans at reasonable rate of interest for the development of industries are not uncommon. But the case is far from being so simple. One who borrows from saokar is under various limitations and liabilities. He must purchase, if available from saokar, the raw materials and other necessaries; the bargain being on credit a premium is not objected by the borrower. He is again bound to sell his products first to the saokar if the latter expresses his desire and sale is naturally at discount. In addition, the usurious rate of interest is the legitimate claim of the lender. Under such trying conditions, it is futile to expect a revival of cottage industries.

This is not peculiar to India only. Other countries too had the problem, but they could find a solution in cooperation. "It is a form of organisation in which persons voluntarily associate together on a basis of equality for the promotion of their economic interest". In prewar Germany, one-eighth of the population subsisted on cottage industries which were organised on cooperative associations. Japan's 60 to 70 percent industrial workers are employed in domestic industries. China has given 'Indusco' for the cottage industries organisation. There are 20,000 handicrafts cooperatives in Russia with a membership of 1,765,000.

The trend of well informed Indian opinion has always been in its favour. The Indian Industrial commission 1916-18 stressed the intimate connection between cooperation and village industries. Royal Commission on Agriculture repeated the organisation of credit on cooperative basis. Very recently the Bombay Economic and Industrial Survey Committee 1938 and C. P. & Berar Industrial Survey Committee 1939 put the case of cooperation as a solution for the village problems. The Cooperative Planning Committee, too, could not think of any other agency but Cooperation in this field.

Rural industries require long term and short term credit. The former will give him opportunity to adopt new tools and technique so as to enable him to compete with machine-made goods. For his usual requirements of profession e. g. purchase of raw materials and marketing of goods, transport, he is in need of short term credit. This he should preferably get from a village co-operative society, but the financial position of average society does not warrant this important change, and the intrusion of some outside agency is badly needed. The popular ministries both in the Centre and the provinces have

freedom was dawning. Prohibition was given the prime place of importance in the constructive programme; for, he visualised that successful launching of the Prohibition Campaign will not only stop the drain of the feeble resources of the masses but also wipe out the social conditions that sponsor 'untouchability' and 'drunkenness' and remove the 'dope' and the 'fetters of drink'.

Amelioration Begins With Prohibition

Gandhiji always reminded us, while he lived that amelioration of the masses begins with the introduction of Prohibition but does not end with the mere passing of the law; that amelioration will bring into play a great deal of self-effort for better living; and can only be achieved through proper social, educational and recreational programme launched as a necessary accompaniment to make prohibition succeed, which will fight apathy, generate self-help, bring people together, irrespective of caste, creed, religion and status in life, provide opportunities for inter-communal fellowship and promote communal harmony. The many social and economic inequalities can thus be bridged; and the country can be prepared for a change of heart and joy-of-living-together.

The Bhore Committee's Report

Quoting a high authority dealing with alcohol, in relation to health, the Report emphatically states: 'Misery, poor living conditions, lack of educational and recreational facilities drive man into drinking.....' A rise in the standard of living accompanied by the provision of educational and recreational facilities on as wide a scale as possible, seem to be essential to ensure success of the campaign.

The Drain Through Drink

The 'Drink' had been draining the masses of their wealth, health and even the morale. It has been a surreptitious device of our foreign rulers to unman the people, undermine their strength and morals, enslave them in body, mind and soul; though to all appearances there had been great improvements under their benevolent rule in the various services for health, education, communications, etc., undertaken with the vice-money. The liquor revenue had been growing by leaps and bounds, till we have come to a stage when some of us do even feel whether we can afford to forego such a good bit of revenue, so easily collected, even without a murmur, from the dumb millions. The unfortunate situation to-day is that the loss of revenue practically starves all nation-building departments of finance, because we had been so long depending on it.

The Tainted Money

It is immoral for any Government to fill its exchequer through tainted sources and earned misery of the masses. It cannot be tolerated in Free India. To derive income from the vice of the people is the height of folly of the past administration. The State cannot and should not cater to the vices of the people and keep tempting them all the time. The excise revenue had been growing at the cost of the prosperity of the people. Political freedom will become a mockery, if we cannot speedily stop the drain; and usher in an era of economic and social freedom and equality for the masses.

Tap other Sources without Sapping the Masses

Money can, had been and will be found by other means. Alternate methods can always be devised by fertile brains. It is the job of our

leaders to find the money where they can find it, without sapping the feeble resources of the masses. Rajaji had given us 'the Sales Tax', though it had been wrongly exploited even during the years of no-prohibition. With the advent of prohibition the Government of Madras had lost about 17 crores of rupees. The vested interests in the trade should have lost at least three times as much. The money, over 70 crores, is back again in the hands of the masses, to live a better standard of life. The need of the hour is to make people happy, derive a fair amount of satisfaction of living, increase production of food and other commodities and cater to the needs of the people; conserve and save as much as possible for national improvements and investment.

The Food and Medicinal Value

People in India are unfed, underfed or mal-nourished. They do not have enough food in their stomach to feed the 'fire' of alcohol. The agricultural labourer works from dawn till dusk, along with the farm animals and goes without even two square meals a day. The industrial worker is condemned to live in slum areas, a sub-human existence, amidst vices, crimes, drunkenness and dissipation. It is cruel and mischievous to suggest that alcohol has food and medicinal value. It is a known fact that alcohol has a special love for the nerve cells. It benumbs the nerves that register fatigue and hunger. It has a narcotising effect. This should not be mistaken as curing fatigue or relieving hunger. Any poison may have some remote food value. But, we cannot feed a hungry man with poison and justify it. We will have to find more and better food for all mouths to feed. Man should be led to live a normal life, without the aid of medicines and stimulants. Further, the climatic condition in India does not demand the aid of 'drinks.'

America has Failed

We find many sceptics who rush to point out that America had attempted Prohibition and had failed. Has India any chance of success? The virile child of civilization has succeeded in many fields of science and modern achievements. Let us strive to emulate America in these respects. In America, the standard of life has been built high. Perhaps, there is a margin left for luxuries and stimulants, for leading an extra fast life which is not normal nor desirable. They say that life is speeded up to such a magnitude that perhaps, ordinary human nerves cannot stand the strain without the aid of the 'dopes'. Life and vocations are getting ultra-specialised. Even recreation, highly specialised and commercialised, border on what we may label as 'vices.' If statistics prove anything, there are more men and women going 'crazy' deriving no satisfaction out of normal living. They may seek the aid of mental and Psychiatric Clinics or safe asylum in suicide, to escape from the perplexities and complexities of life of their own creation.

The Vested Interests

Prohibition failed in America because 'big' money and the vested interest in the liquor trade worked against it and went into an unholy alliance with the anti-social and disgruntled elementls of the society. The 'big' money was interested in doping the masses. What they paid as high wages on one hand was recovered from them through the grog shops on the other hand. It is thus they kept up the wants of the working class in this surreptitious way.

The 'big' money manufactured more than the needs of their respective countries. They had to find markets abroad and spread the tentacles of colonial misrule or economic imperialism. They found that there cannot be a better market than feeding the modern wars. Thus, the 'big' money manufactured the wars as well. They wanted and found the doped millions to feed the cannons, and so, the vicious circle was completed.

India Should Harness Industries to Serve Man

India is just on the first rung of the ladder of industrialisation. She has to go a long way to meet the needs of her own people, even half-way. With her spiritual heritage, she will have to harness her industries to serve man but not enslave him. She will pay heeds to the words of Oliver Goldsmith, "Ill fares the land, to hastening ill a prey, when wealth accumulates and men decay." She will not create a frankinstein to devour humanity in our impoverished country. The pit-falls of other nations will be sufficient warnings for India, to have faith in moral values, to steer clear of power-politics and inter-national greed. With de-centralised Industrialisation, suited to her agricultural economy, she will build up self-sufficiency in the country and improve the standard of living of the masses. India should be alive to the dangers that she may have to face, from within as well as from outside the country, in this great humanitarian reform; for, while some in our country may be interested in amassing wealth for themselves, there may be others from outside who may cast envious eyes on our newly won freedom; and may try to break prohibition through organised rackefeering, to undermine our morale and rope us into a prospective war.

Evils of Alcohol

The use of drugs, opium, cocaine and alcohol is resorted to for 'escape' and temporary feeling of exhileration and contentment. Their injurious effects upon the physical, mental and moral health and growth are commonly known. They bring about physical degeneracy and turn man into a beast. As Sinclair says, 'Drunkenness places man as much below the level of beasts as reason elevates him'. Drink destroys a man's sense of decorum and propriety, social standards and values. Many a man in his prealcoholic days would never have thought of violating social standards of breaking the laws of the land, commit rape, and even murder, when his self-control and conscience are anaesthetised by alcohol. Crime and alcohol have always been associated.

Civil Liberty at Stake

Still, we find a few advocates of Civil Liberty taking up the cause of the ex-addicts and say that man should have the liberty to 'drink' to drown his sorrows and swim in his joys. But they forget that man is not an isolated individual. He is tied up with his family, community and society. Do we have the liberty to do away with our own individual lives? The State has a definite responsibility towards the welfare of its citizens, especially in a free country. The nation has to grow in body, mind and spirit. The 'drink' has left the masses as slaves to the habit; as slaves to the abuses of our social customs and practices; and has left them sapped of all their initiative, intelligence and enterprice. The irresponsible drunkard will no more have the liberty to wreck and ruin his

own health and life, and to squander away his wage earnings, without care of his wife and children. He will no more be brutalised under the influence of drink to beat and bully his wife and children and condemn them to a miserable existence. The community will have less of drunken brawls, crimes, debauchery and mis-demeanour which all have inspiration from the liquor. By doing away with 'drink', man will turn more human. These are definite gains to the society.

Law of Prohibition

The law should be viewed as any other law that govern the country. If all are law-abiding citizens in any country, there is no need for the many laws; and it will be an ideal society. The society as it is today is far from being ideal. Inspite of the many laws, society is put to the necessity of maintaining Law-courts, Police-force and the Jails. The whispering campaign whether prohibition has been a success reveals defeatist mentality, meant to undermine the morale of the Prohibition movement. The law breakers must and will have to be shown their proper place irrespective of their status and position in life. The temptation of the evil must be prevented by lawful prohibition. The addicted masses must be educated to spend their time and money in better ways Legal men as a profession should refuse to defend the anti-social elements who deliberately try to sabotage the great social reform movement. Village communities should disown such individuals and give them no place in their social, economic and community life, till they reform themselves. Till then, they should be shunned as social outcasts.

Need for Public Cooperation

Prohibition should be turned into a public campaign. Prohibition as a law was demanded by the people. It was sponsored by the chosen representatives of the people. It is a law, undoubtedly for the benefit of the masses. It demands and expects active cooperation and vigilance of the public for its success. The cooperation of all social service agencies, youth movements, recreation and gymnastic institutions, Temperance movement, etc., in the country, which serve irrespective of caste, religion and status, should be roped in and subsidised by the state, to serve the cause of Prohibition through their respective sphere of service. All those who can make a contribution for building a better society should find a place in the movement. With the social trend in modern education, the services of the educational institutions and the educated people should be harnessed to improve the condition of the under-privileged people, to bridge the gulf that exists between the classes and the castes. The entire Government Administrative machinery should be switched on to serve the cause of Prohibition and Amelioration. It cannot and should not become a mere departmenta affair. It needs the active aid and coordination of the various services to enforce Prohibition effectively, and to render services that will ameliorate the masses into a better standard of living and wean them from the vicious grip of the vice.

Propaganda for Prohibition

Temperance propaganda should precede the introduction of Prohibition. After the advent of Prohibition, propaganda has to be subtle. All direct references to the drink-evil or the drunkards may safely be avoided, as both will be conspicuous by their absence, and no one desires to be reminded as an ex-addict. The more important thing is to organise the leisure-time, profitably, through social participation, to do propaganda for better-living, to increase the amenities of life and to improve the standard of living. All-propaganda should be switched on towards this end. Through inspiring leadership

community-effort should be organised against diseases, slums and slum-habits, insanitation, illiteracy, litigation and other social evils. Dynamic social action alone can convince the people abont the real purpose of the prohibition movement. The future generations should be given a chance to grow in more elevating and different traditions and environment.

Media for Popular Propaganda

Modern means of popular education through Cinema, Drama, Folk-Dances, etc., should be fully exploited. Propaganda vans, planned as Mobile Community-Centres, fitted with broadcasting, cinema and Radio equipment, with plenty of indoor and outdoor games, library of popular journals and books and charts for visual education, etc., can be sent, moving from village to village with propaganda and amelioration staff who should be trained social workers. This can spread joy, happiness, light and knowledge. Drama can be made a medium of social education. Dramatists can organise crusade against social evils. Drama can combine literature, education with entertainment. We have a variety of these, suited to our rural parts, viz. Tharu-koothu in Tamil, Veethi-Nataka in Telugu, Ottam-Thullal and Kathakkali in Malabar, Yaksha-Gana and Bayalata (open-air drama) in Kannada-Desa, etc. Katha-kalakshepams in Tamil and Burah-katha in Telgu and popular media for conveying social ideas to the masses. Our country is rich in a variety of these Folk-activities and they should be harnessed to serve the cause of Prohibition and amelioration.

How Prohibition will benefit the Masses?

Prohibition campaign should be compared to a big lake. The law is the bund which keeps the water within. The bund has to be safe, sound and strong. People should not and will not allow the lake to break the bund, for the consequent flooding will wipe out the village. Public vigilance alone can take care of that. The bund conserves the streams that bring in fresh water into the lake. Likewise, prohibition can conserve the resources of the masses, the health, wealth and the morals. The water within will have to be carefully diverted through regulated channels into the green pasture fields. Likewise, the energies and the resources of the people should be harnessed through cooperation and common effort and turned into useful national projects, to improve the standard of living of the masses, to improve the living conditions in the villages and to build up the country from its devastated condition.

The Great Beneficiaries

The Great Beneficiaries of the Prohibition movement are the women and the children, for, they had been the greatest victims of the 'drink-addicts'. In the pre-prohibition days, the workers had been spending most of their wages on drink. The women had invariably been neglected and put to the necessity of working for their livelihood, as well as to shoulder the responsibility of running home and of looking after the children. The children of the working class are usually neglected and exploited to supplement the income of the home. For the sake of the future, the children should be given a chance to grow normally and get the opportunities of education, recreation and better bringing up. It is a tragic fact to record that childhood which promises so much for the future of the country, is simply skipped over in India. Play-life is the birthright of the children, not only of the palaces but more necessarily of the slums as well. It is nature's way of building health in the growing generations. The youth of the working class have been exposed to the evils of crowded slum life, crimes, vices, drunkenness and

delinquency, in the absence of healthy environment and social opportunities. How can we expect a happy, healthy and efficient working class to spring up under such dismal surrounding? How can we expect production on land and factories to increase, with sullen, lazy, discontented and inefficient workers? With freedom born and with the exit of the drink-demon, the life of the working class ought to be organised to be better.

Drink-the Root Cause of Poverty and Untouchability

It is a standing disgrace to our civilization and a blot to our culture that 'we have dehumanised a section of the society and condemned them to a low level of existence', as the Premier of Madras has recently pointed out. The spell of 'drinking' has been more responsible to revet the fetters on willing hands and keep them low, down and out, suppressed, oppressed and depressed. The law of Prohibition has removed these fetters. It has thrown open the doors of opportunity, has left the financial resources in the hands of the masses and has created in man an urge and desire to improve himself, his surroundings, his home, wife and children, the community and the country at large. He had been doped so long to tolerate and live in a sub-human way. Hereafter, he will be in his senses to strive and improve his status. A great mental revolution has taken place in the Hindu thought and culture that it is once again asserting itself as a progressive dynamic religion which is capable of growth and change to suit modern social thought and progress.

Clear the Slums and Create the 'Lungs'

It should become the policy of the Government to wipe out the slum areas and eliminate the social isolation of the under-privileged people. The slums are the breeding places of plagues, pestilence, crimes, drunkenness and delinquency. The slums are the hell on earth and are a disgrace to our civilization and the human dignity. Worse than the slums are the slum-habits which preserve the curse of 'untouchability'. Sanitary dwelling colonies should be created through the cooperation of the employers, employees, the Government, Municipalities and philanthropists. Workers' colonies, should have the first priority in any housing scheme to relieve congestion. The colonies should be built on high level grounds or basements, not in the low lying areas where the slums lie; with plenty of light, air, drainage and water-supply, space and privacy, parks and play-grounds, places of worship and places of recreation, for healthy and abundant community life.

Need to organise Self-Help and Common Action

To stimulate and harness self-effort and common action will be the greatest contribution of scientific social welfare services amongst the masses. The under-privileged should be slowly educated and guided to live a better standard of life; to grow and eat more and better food that will give them strength and vigour for hard labour, without seeking the aid of stimulents; to organise their leisure for the production of joy and improved standard of living, to spin regularly and provide themselves with adequate clothing; to create healthy environment, build airy and well ventilated huts and live in more congenial surroundings; to enjoy the necessities of life through wise planning and increasing efforts; care adequately for the comfort of their women folks and education and care of the children; and provide for the future security by way of saving regularly, and investing some money on live-stock, lands, jewels, etc.

The Government Survey at Ahmedabad

The Government survey at Ahmedabad conducted after the introduction of Prohibition for the first time, has conclusively shown a marked improvement in the condition of the masses; increased purchasing power, utilization of savings in advancing material amenities of life and an all-round beneficial effects on the physical, mental and moral life of his people. Industry was benefited by increased efficiency and less absentesism. The Police Commissioner's Report during that period, admitted, 'that Prohibition has been beneficial is evinced by the appreciable drop in hurt and cognate offences.'...' Undoubtedly, liquor directly and indirectly helps crime. So far as the undernourished, over-worked, ill-housed labouring classes are concerned, the liquor is the greatest menace; and once it is removed, it will relieve human distress to a great extent.'

Importance of Counter Attraction

Prohibition cannot succeed as a mere negative proposition, if it is carried on as a mere 'Don't Do'. If we want people not to drink, we should tell them what they should or could do instead. We should put forth suitable alternatives or counter-attraction by which the 'urge' that drags him to the tavern may be quenched. The tavern is the poor man's club where he meets his fellowmen on terms of equality; sinks and drowns his sorrows and anguish of life. Should we not organise the leisure time so that the idle-man's mind does not become the devil's workshop ? If we wish to detach a person from a certain 'herd' it can be done only by attaching him to some other. If a social evil like drinking is suppressed by law without suitable and attractive social programme to satisfy the sociability, it is bound to fail; and even if it succeeds, the human mind is ingenious that the vice will express itself in many ways, most undesirable and unforeseen.

People's Canteens and Substitute Drinks

The tavern is not only the poor man's club but also the canteen where he eats to quench the fire of 'drink'. Invariably, the eatables are offered in such stinking, unhygienic, and unwholesome surroundings, that if the men are to be in their senses, they will hardly feel like eating anything in such miserable environment. Still, they eat and drink and make merry in hilarity, vulgarity and fighting which the atmosphere naturally inspires. With the advent of Prohibition, should not the society provide some alternate places, in clean and elevating atmosphere, where people can get together, get some substitute drinks like the milk and the milk-products, Tea or Coffee, Fruit-Juices or Cane-Juice, Tendor Cocoanuts, etc.? A-lot of homely dishes can be prepared out of the many cheap cereals and grams that are being popularised during these days of food scarcity, and served at these people's Canteens. After a days labour, the workers do need some eats and drinks to pick them up. Tea and coffee are light stimulants, though habit-forming to some extent. Milk may be too costly and still scarce. Fruit-Juices may be beyond the reach of the working class. As a long range plan and as a natural corollary of the Prohibition movement, Government should encourage greater milk production by organising cattle-breeding and milk-supply societies on an extensive scale, so as to make milk available cheap, in plenty and purity. Fruit-Culture should be encouraged. It is necessary to sponsor Cooperative Canteens as adjuncts to all Cooperative Institutions and community-Centres; and these may be subsidised to some extent to benefit the masses.

The Craving for Social Participation

Man wants to be human. There exists a craving for social participation and to escape the monotony of routine existence. There is an unquenchable thirst for knowledge, may be physical, intellectual, aesthetic, cultural or spiritual. There is the urge for leadership, excitement thrills and self-expression. The modern recreation movement with its programme of games, sports, folk-dances, reading-rooms, libraries, debates, music, cinema, drama, outings, community-recreation, bhajans, celebrations of festivals, etc., can accept the challenge of the problem of leisure and use it for the elevation and preservation of human values. It offers many fields for popular education and nation-building. Hard-working men, all over the world, seek strenuous activities for their recreation unless they are made to slave at their jobs and are sapped out of all their energy and life as it often happens in our country. Recreation is something in which they indulge out of free-will and joy-from-within. They act as soothing balm to the tired nerves; and it is Nature's way of providing and recouping strength and sinews, for efficient economic activities. Its long-range economic value should not be under-rated in Free-India.

Revival of the Ancient Arts of Recreation

Our ancients knew the art of living and they planned life in a harmonious way. In many cases, we do not have the capacity to understand or appreciate the significance of many of our customs, manners and traditions. We find in our great country, a variety of many recreational activities, different in different parts of the country,—in indigenous exercises, games, sports, arts of defence and offence, folk-dances, drama, music and folk-lore. These have been designed to suit the varying cultural levels of the participants, from the lowest to the highest; and to re-create them physically, mentally, morally and spiritually. Some of these activities are fast dieing out or have deteriorated during centuries of foreign rule and neglect, while some of these activities were even prohibited because of their intrinsic worth. With freedom born in our country and a natural fillip to all movements for national renaissance, it is time for us to revive and encourage these activities; put them on a scientific basis; organise competitions within the villages and on wider basis. These can become an important aspect of the New Life Movement in our country.

The Leadership for Recreation

Let it be understood that the leadership is the key to the success of any movement, and especially one based on service. Recreation has been summoned to aid prohibition to succeed, because of its educational values. Let us realise that Rajaji, the wise Seer and Statesman, is the father of this movement. It should also be realised that production of joy and happiness will wipe out conditions that breed drunkenness which is often resorted to as an 'escape. It is not an easy thing to plan out the leisure time of other people and make it fruitful; it is not an easy thing to inspire people to re-create and build themselves up. We cannot dictate or order about; but can help, guide, inspire and attract them into fruitful activities and pleasurable pastimes. Besides training and experience, the entire administrative set up should have abundant faith and appreciation of their work; and look on their jobs as a calling to serve and build Free India. Through comraderie and understanding of the problems, more effective services are possible. Mere departmental drive from the top, without grasp of the problems and difficulties will only crush genuine efforts and encourage make-belief

'Command-performances'. For abiding values, there should be perfect team work in the organisation, and common ideals to inspire all the workers. To run a successful programme of activities, the time, the place, the equipment, the participants and leadership should be harmoniously coordinated. The Leadership calls forth for all the energy initiative, experience, capacity, character popularity and magnetic influence.

The Temples as Social Agencies

In ancient India, in a homogenous Society, our Temples had been centres not only of religion but of learning, social and recreational activities as well. The Temples had been the rallying ground for all artists and the connoisseurs of the great arts. The social significance and the potentialities of many of our festivals are not fully realised today, though they continue to play an attractive part in the social life of the communities. Temple festivals at various parts of the country still continue to attract huge crowds, from far and near and become the centre of economic, social and recreational activities, besides the religious. It is interesting to study how, in the olden days, the recreational activities were made highly educational and character-building for the masses, because of the spiritual approach, the traditional reverence for the 'Gurn', the unexemplified chivalry and discipline and the religious vigour with which training and practice were conducted. A lot of folklore had grown round the life of Krishna and the heroes of Ramayan and Maha-Bharat. These we find fully depicted in the architecture, painings, Folk-Dances, and the classical dancing. Vir Hanuman is held in high esteem for his bramhacharya, strength, humility and service. Our ancients knew the value of sound leadership in this youth-building field of education, for, they realised that the strong man with character, will be an asset to the country in every way; and without character, he may well turn out to be a burden or even a menace to the society.

Schools as Social Education Centres

The Schools have a vital role to play in the field of social service. The educated people are just a fraction in our country; and as the privileged few, they have the responsibility to share in the nation-building ventures. For social services, there is no better asset in a village than the School-Master. Modern educational trend rightly recognises physical education and recreation as integral parts of education, though, during the years of slavery, these had been sadly neglected and relegated to an inferior status. And, now, in Free India, Social education as enunciated by the Central Government, is expected to enlarge the scope and functions of our schools to serve the entire community in the social and recreational fields and for popular adult education through Radio, Cinema, Community-Singing, Drama, etc.

The Cooperative Movement

The Co-operative movement is a social movement, based on service, equality, self-help, mutual-aid and community-effort. It was originally intended as a remedy for rural indebtedness and to encourage thrift. The latter aspect can stabilise and consolidate societies, though this sphere of work is more often lost sight of. With the advent of Prohibition, organising thrift amongst the masses, can fight the disease of inflated economy a great deal and provide economic saving and security for the masses for their future. Besides Credit Business, the Cooperative Movement has made progress in many other directions, through Consumers' Co-operative Stores, Co-operative Housing Societies and Producers' Co-operative Marketing Societies

(for Milk, Agricultural produce, Poultry, Fruit culture, Weaving, Cottage Industries, etc.). Through these ventures, it is providing occupation and subsidiary income for many. The Cooperative Movement has and can render service to the refugees, the unemployed and the under-employed, in various vocations and industries, through cooperative Workshops, Land Colonisation, Labour Contract, Jaggery manufacture, Coir Manufacture and other small-scale industries.

Cooperatives as Better Living Societies or Community-Centre

Co-operative institutions spring up to answer the felt needs of the society. By confining themselves only to the economic or financial dalings, cooperatives have become miniature factories. It is time they change the factory or business atmosphere. The Cooperative Movement cannot afford to be cold and callous about human welfare, when amelioration is challenging their attention. It has to be service-minded which alone will create the necessary goodwill and confidence in the public. The Societies should enlarge their activities to the members, their families and even the non-members and the under-privileged public. In progressive countries, they cater to the social, educational and recreational needs of the community. Instead of forming separate Societies for the specific purpose of promoting Better living, every Cooperative should transform itself into a Better-Living Society, not in mere name but in action and reality; tap the local resources and leadership, inspire local responses and sponsor various social welfare, recreation and amelioration projects.

Urban and Rural Labour Welfare Centres.

In places where we do not have effective social agencies, we may organise Grama-Sanghams, with all people as members and representatives on the Committee, to organise the community-effort. It is high time for all provincial Governments to sponsor Labour Welfare Centres in all industrial towns as was done by the Government of Bombay as a part of their first prohibition campaign; and to establish Labour Settlement Homes on the model of Nagapada Neighbourhood House at Bombay and Ashok Vihar at Madras, with the aid of private philanthropy or leadership of Municipalities. For the rural areas, we need a network of Rural Welfare Centres which can coordinate and link up the work of all the departments of the Government and make them more effective; undertake the amelioration programme in right earnest, produce happiness and joy-of-living and give a chance for prohibition to succeed.

The Scope of Amelioration Work and Public Welfare

The Sphere of amelioration is all pervasive and comprehensive. The local problems of the people will have to be anticipated and tackled. The local resources in men, material and money will have to be tapped successfully, to improve the standard of living. The local leadership of the existing social agencies such as the schools, Cooperatives and the official agencies, of the various departments, should be harnessed effectively and rallied round for common pursuits and social progress. The service of the common man should become the only motive. Through a comprehensive programme of welfare activities it is possible to recreate the lives of the individuals, families, communities, villages and the country at large. It can attempt to solve the problems of finding safe drinking water, adequate housing, production of more and a variety of food and clothing; to wipe out conditions that sponsor

people scrupulously avoid talking in the convincing language of facts and figures. They simply resort to emotional appeals in matters which require practical and factual treatment.

That is the background in which planning has to make headway in this country. And, we must of necessity be satisfied with a semblance of planning under the conditions and improve upon it as we get along.

FOOD PRODUCTION DRIVE IN BIHAR

INTRODUCTION

The Government of India have estimated a total deficit of 4.4 million tons of foodgrains for India over the production in the year 1946-47. This deficit has to be wiped out before 31st December, 1951. Bihar's share out of this deficit is estimated at 3.7 lacs of tons. Our goal is to achieve an additional production of 3.7 lacs of tons by 31st December, 1951 over the production of 1946-47 to wipe out the deficit.

This additional production can be obtained by bringing new land under cultivation, by providing irrigation water, manures, and better seeds. The additional land that can be brought under cultivation is limited owing to diffienlties of reclamation and follow on cultivation. Unless people come forward to settle down in the lands that are reclaimed, no purpose would be served by reclaiming land. Large blocks of lands that are to be reclaimed are located in areas which are considered unhealthy and which are scarcely populated. Since by December, 1951, it may not be possible to reclaim extensive areas and resettle people, the reclamation work has to be limited to managable proportions. Of the remaining measures the most important is *provision of irrigational facilities and use of compost.* It would not be wise to depend too much on chemical fertilizers which have to be imported from abroad, though a certain amount will have to be used.

The basis of calculation of additional food production due to different kinds of measures is given in the statement below. The estimates are on a conservative basis

Nature of Project	Addl. Food (in tons).	Cost of each Unit
		Rs.
(1) Minor Ahars, Pynes & bundhs each ...	3.67	2,000/-
(2) Medium Ahars, Pynes & bundhs ...	3.66	20,000/-
(3) Surface percolation well each ...	1.00	1,400/-
(4) Open boring with Rahat each ...	2.00	1,000/-
(5) Oil engine & pump 10,000 gallons capacity each	5.00	1,800/-
Oil engine & pump 20.000 gallons capacity each	10.00	2,600/-
Oil engine & pump 40.000 gallons capacity each	20.00	6,000/-
(6) 5"-6" tubewell with an engine & pump each	20.00	13,500/-
(7) Lift irrigation tubewell each ...	50.00	40,000/-
		transmission ext
(8) Ammonium Sulphate fertilizer per ton ...	2.00	325/-
(9) Oilcake per ton ...	1.00	220/-
(10) Compost per ton....	1/27	-
(11) Green Manuring per maund of seed ...	1/10	-
(12) Drainage of chaurs per acre ...	1/7	-
(13) Reclamation of land per acre ...	0.5	4(

Notes on the Statement

(1) For Ahars, Pynes and bundhs, the additional production is estimated at the rate of 5 maunds per acre of the land irrigated. The area commanded is generally taken to be 100 acres. Since it mostly benefits the paddy crop and the benefit is largely derived in an adverse season which comes once in five years, the benefit from Ahars, pynes and bundhs is only 20%. Each Ahar, pyne and bundh is therefore taken to benefit only 20 acres of land. The additional yield comes to $\frac{20 \times 5}{27.2}$ or 3.67 tons

(2) Medium Ahars, pynes and bundhs are estimated to command 2000 acres and yield extra 366 tons at the rate of 5 maunds per acre.

(3) The surface percolation well can command 2-6 acres of land, the former being the case in Chotanagpur and later in the rest of Bihar. Without irrigation rabi cannot be grown in Chotanagpur. In actual practice it is found that in Chotanagpur nearly one ton of additional food is produced from one well. In South and North Bihar where rabi can be raised without irrigation, the additional yield due to well is taken to be one ton for 6 acres at the rate of 4-5 maunds per acre.

(4) Open boring in a well fitted with a rabat will treble the area under irrigation and, therefore, the additional yield from a well with an open boring is 2 tons, provided it is fitted with a rabat.

(5) Oil engines and pumps to be operated by private parties for lifting water from rivers, streams and nallas will give an additional yield of 1/5 of a ton per acre. The area commanded depends upon the size of the pump and the supply of water.

(6) Private tubewells command about 100 acres and yield 20 tons of extra food at the rate of 1/5 ton per acre.

(7) Lift Irrigation tubewells command about 250 acres and yield 50 tons of additional food at the rate of 1/5 ton per acre.

(8) Fertilizers give an additional yield of 2 tons of husked grain per ton of fertilizer used.

(9) Oilcakes are estimated to give an additional yield of one ton per ton of oilcakes supplied.

The effect of fertilizer or oilcake is less where the water is a limiting factor.

(10) Compost is expected to give one maund of additional food per ton of compost applied.

(11) One maund of green manure seed sown in an acre will yield 1/10 ton extra per acre.

(12) Drainage of chaurs estimated to give an additional yield of 1/7 of a ton per acre.

(13) For reclaimed land the estimated production is 14 maunds or ·5 ton per acre. This takes into account both the crops kharif and rabi from the same land.

The benefits of irrigation and reclamation are permanent and,therefore, cumulative. The additional production that may be attributed to irrigational works and land reclamation carried out in 1947-48 and 1948-49 may, therefore, be deducted from the target of 3.7 lacs of tons. Since the basic year is 1947-48, previous achievements are to be ignored.

drunkenness and the curse of touch-me-not-ism, through, social participation and elevating community-recreation; to improve rural communication, lighting, sanitation, health conditions and services, and educational facilities; and to generate self-help, common-action, cooperation, the habit of thrift and a sense of citizenship.

In an ideal society, there is no need for any social services, because all functions of the State will be harnessed for the services of the citizens. The spirit of service will become the very life breath of its administration. But we will have to take the society as it is today, with all its handicaps and shortcomings. Further, we have the legacy of the past misrule for over two centuries, hardening of the heart due to the participation in two bloody wars and the unchanging machinery of administration. Social services are born as a challenge to the dehumanising influnces that are reducing humanity to the level of beasts and brutes. Will they be given a chance to serve humanity, the cause of love, service and abundant living?

The Administrative Machinery For Public Welfare

The entire Government machinery of administration should be focussed on the great social movement of amelioration and public welfare. It cannot and will not be a success if it is viewed as the work of a particular department or departments to whom the work may be entrusted for the time being, for administrative convenience. The success of this sphere of work should be evaluated by the amount of cooperation that is derived from all departments and the general public. If for any reason, it is viewed as the work of a single department, it will not only fail to generate the necessary public enthusiasm and cooperation, but lose its importance and effectiveness. Effective public service is possible, if all the social services of the Government can at least be coordinated and brought under one unitary central control.

Need for a Ministry of Public Welfare and Coordination

If Prohibition is to succeed the fundamental thing is to wage the war against the social conditions amidst which the demons of 'Drink' and 'Untouchability' survive. Improving the living and working condition of the masses, to raise the standard of living, planning the public welfare in urban and rural areas on a comprehensive scale, coordinating and toning up the services of all departments for the service of the common man, organising the leisure, recreation, social and community life, conducting various social experiments in specified areas, organising women's welfare and special services for the Harijans and the underprivileged, Re-habilitation work, etc., in other words, a comprehehensive Public Welfare programme, can provide a common plank for all nation-building workers, to come together, cooperate and serve the common man.

The Safety Valve

Public welfare Department, working directly under the control of the cabinet and the Secretariat, can serve as the Safety-Valve of the administrative machinery. It cane tone up the quality of the services through effective coordination and bridge the interdepartmental jealousies, pride and prejudices. In Free-India, the services should be based on love, pursuation, service and faith in the power and potentiality of the common man. The Welfare Personnel should have aptitude, and be trained and experienced in a variety of social services. They should have perfect understanding and appreciation of every aspect of nation-building work so that they will work in unison, for common objectives and ideals. Social services

RURAL INDIA

Vol. XII, No. 10] NOVEMBER, 1949 [Whole No. 128

"Salvation of India lies in Cottages."
—*Mahatma Gandhi*

ABSENCE OF FACTUAL PLANNING

BY the courtesy of Dr. Syed Mohamud, Development Minister, Bihar Government, we have been supplied with a copy of 'Food Plan' of Bihar Government which we are glad to publish in these columns in an abridged form. We once again take the opportunity to make an appeal to the Ministers for Food and Agriculture of the various Provinces and State Unions to favour us with their plans of 'Food Drive' for publication in 'Rural India.' It is imperative that the people whose cooperation has been most earnestly sought by the Government in making the 'Food Drive' a success should of necessity know the Government measures and be convinced of their scientific and methodical approach.

Obviously, we have two objects in view in publishing these plans. Firstly, in a democratic age, people must be well posted of the doings of the Government. Secondly, if peoples' interest has to be awakened and their association has to be increased with national measures of this nature, they must have the closest touch with their progress. Publication of these plans place the people in possession of what the Government intend doing and how and where they should lend their cooperation to the measures of their own welfare.

Absence of scientific and integrated planning has been the major drawback in the campaign of 'Food Production' in the past. That defect still persists. It is difficult to call our Government plans factual and realistic. They are hardly based on the accurate data of the countrys' actual production in previous years, the possibility of maximising production with means available and practical, the provision of trained and efficient working machinery and the availability of adeqnate funds for purposes of execution. We doubt, if the Government plans satisfy any of these major tests. It is no wonder, plans lacking in these essential elements fail to carry conviction to the people. The Bihar plan of 'Food Production', which we publish, merely meets half-way to satisfy these tests.

Planning is a new science in this country and we have hardly any practical experience of either framing accurate and detailed plans or executing them dexterously. By temperament, we are an emotional people lacking practical sense of a man of action. We are wanting in planning sense, even when we are not averse to it. We hardly if ever, talk in the language of facts and figures if we do not run away from it. Our top most leaders and administrators even when they invite cooperation of

PERMANENT TARGETS ACHIEVED IN 1947-48 AND 1948-49

Permanent targets achieved in 1947-48 and 1948-49 are as follows:

Ahars, Bandhs and Pynes

NATURE OF PROJECT				Addl. Yield in Tons	
Year	G.M.F.	Revenue Department		Per Unit	Total
1947-48	1152				
1948-49	1269	3970	6381 x	3.67	23.418
Surface Percolation Wells					
1947-48	1024				
1948-49	2862	...	3886 x	1	3,886
Successful Open Borings					
1947-48	123				
1948-49	102	...	225 x	2	450
Successful Tube Wells					
1947-48	12				
1948-49	6	...	18 x	20	360
State Lift Irrigation Scheme		...	...	...	1,810
Reclamation of Chaurs		...	...	...	4,580
Reclamation of Land		11,850	x acres	1/2	5,925
				Total	40,429
				or say	40,000 tons

The balance that remains to be made good is 3,300 lacs of tons. It is sought to be achieved in the following ways:-

THE TARGETS FOR VARIOUS PROJECTS

NATURE OF PROJECT		Addl. Yield in Tons		
		No. Proposed	Per Unit	Total
(1) Minor Ahars, Pynes & Bundhs				
1949-50	6,500			
1950-51	6,500	16,000	3,67	58,000
31st Dec. 1951	3,000			
(2) Medium Ahars, Pynes & Bandhs;				
1949-50	30			
1950-51	50	80	366	29,000
Upto 31st Dec. 1951				
(3) Surface Percolation Wells;				
1949-50	4,000			
1950-51	5,000	9,000	1	9,000
Upto 31st Dec. '51				
(4) Open Borings Fitted with Rahats;				
1949-50	200			
1950-51	7,800	8,000	2	16,000
Upto 31st Dec. '51				
(5) Tube-Wells:—				
1949-50	10			
1950-51	120			
December 1951	80	210	20	4,200

NATURE OF PROJECT		Addl. Yield in Tons		
		No. Proposed	Per Unit	Total
(6) Lift Engines and Pumps;				
SMALL		300	50	1,500
1949-50	110			
1950-51	190			
Upto 31st December 1951				
MEDIUM		200	10	2,000
1950-51	200			
Upto 31st December 1951				
LARGE		200	20	4,000
1950-51	200			
Upto 31st December 1951				
Irrigation Department				
(7) Lift Irrigation—Tube-Wells and River Pumping Units ...		...	50	6,090
(8) Drainage of Chaurs Embankments, and other major Irrigation Schemes ...		...	1/7	83,580
Revenue Department				
(9) Land Reclamation by Revenue Dept. 30,000 Acres ...		...	1/3	10,000
Agriculture Department				
(10) Land Reclamation and Farming by Agricultural Department				
1950-51	10,000	30,000 Acres.	1/2	15,000
1951-52	20,000			
Total Permanent Projects.			2 Equal to	40,000
Recurring Projects				
(11) Fertilizers 20,000 tons x ...		...	1 ,,	14 000
(12) Oil Cakes 4 lacs of mds. x ...		...	1/27 ,,	40,000
(13) Rural Compost 12.4 lacs of Tons x ...		...	1/27 ,,	3,000
(14) Town Compost 1 lac of tons x ...		...	1/10 ,,	2,000
(15) Green Manuring 20,000 mds. seed x 1/10 x ...		...		99,000
(16) Recurring Total: ...		...		238,370
Permanent Total: ...		...		3,37,370
Grand Total: ...		...		

The contribution of the Revenue, Irrigation, Agriculture and Co-operative Departments in meeting the food deficit will be as follows:—

Revenue Department Items 1 and 9 ...	is equal to ...	...	68,000
Irrigation Department Items 7 and 8 ...	...	...	89,670
Agricultural Department Items 2, 3, 4, 5, 6, 10, 13, 14 and 15 ...	,, ...	...	1,25,700
Co-operative (Credit Agricole) Items 11 and 12 ...	... ,, ...	...	54,000
		Total	3,37,370

ing the cost of reclamation units is estimated at 179.4 lacs. Ultimate recurring cost is estimated at 53.1 lacs which excludes interest and depreciation on capital equipment and buildings which amounts to 14 lacs. When all the three farms will be working the estimated income will be 90 lacs of rupees, leaving a net profit of 23 lacs per annum. These calculations are rough and may need revisions in the light of detailed examination and working.

11. Fertilizers:-

This scheme does not involve any cost. Since before 1946-47 10,000 tons of fertilizers were being normally distributed, the total quantity to be sold through Credit Agricole in 1950-51 will be 20,000 tons so as to provide 20,000 tons of additional fertilizers.

12. Oil Cakes:-

This scheme does not involve any cost as subsidy has been discontinued but if the sales fall down, a subsidy will have to be given. Before 1946-47 two lacs of maunds of oil cakes were being sold. An additional quantity of 6 lacs of maunds will have to be sold in 1950-51.

12. Rural Compost Scheme:-

It is proposed to place a Kamdar in charge of 30 villages, and to provide one overseer for the supervision of every ten kamdars. The Kamdars will see that in every village about 100 compost pits are dug and an additional quantity of 18 tons of compost is prepared per village. The purpose is to utilise all the waste materials for preparation of compost. This will aid in improving the sanitation of the village and will increase the supply of organic matter which is deficient in our soil. With the production of fertiliser from the Sindry Factory, Bihar will naturally use large quantities of fertilizers. Compost is a very necessary counter-part of the fertiliser. These Kamdars will be useful also in distributing vegetable seeds, collecting seeds of quick growing trees and distributing the seedlings of fruit plants and quick growing fuel trees. In course of time they may well become the agricultural agents of the Department. They will also be in a position to tell the villagers the kind of help that is offered by the Government to the Agriculturists.

In the district for propaganda and other activities at present 190 overseers and 1130 Kamdars are employed (in Grow More Food, Paddy Seed Multiplication Scheme, Fruit Production, Propaganda and Cane Development Scheme excluding the Engineering staff). It is proposed to appoint additional 39 overseers and 1159 kamdars for the rural compost scheme. For each Kamdar a quota for compost pits, quota for collection of trees, seeds and a quota for distribution of vegetable seeds and seedlings of fruit plants and quick growing trees will be fixed. At the rate of 18 tons of additional compost for 30 villages per kamdar the total compost production is estimated at 12.4 lacs of tons. At the rate of one maund of additional yield per ton of compost applied the additional yield expected is 44,000 tons or say 40,000 tons not taking into account other benefits that will follow because of the teaching of better methods of preservation of cow dung and urine growing more vegetables and planting fuel trees. The kamdars will also assist villagers in reclaiming lands. If each village reclaims one acre, we shall have about 35,000 tons of additional foodgrains.

If at any time any of the other existing schemes the staff of which will also

(Continued on 3rd Cover-page.)

THE TIME ELEMENT IN ECONOMIC PLANNING

By. Dr. D. S. Chauhan

IN the discussions on economic planning, particularly when the practical side is approached and the actual schemes are suggested, it is usual to come across the phrases 'short-term plans' and 'long term plans.' The former term refers to measures of immediate relief in some trying circumstances or plans to achieve immediate objectives specially in abnormal times of wars and depressions, e.g., the production of armaments during the war time and the procurement of food grains from home or abroad in times of food scarcity. The latter term refers to schemes which mature and prove effective after a considerably long time during which people cannot keep awaiting and immediate relief becomes necessary, e.g., the development of communications and the construction of irrigation or multi-purpose projects. It is intended to examine in this article the propriety of the usages of short and long terms in economic planning.

The idea of economic planning can be traced back to Plato who in his Republic presented a blueprint of an ideal state, and it can be tracked down in subsequent centuries in the proposals for utopian communities, e.g., in Utopia by Sir Thomas More written in 1516 and in The New Atlantis by Fransis Bacon written a century later. Further it can be found in its practical shape in the establishment of communities as a result of the efforts made by Robert Owen, E. Cabet, J. H. Noyes, Fourier, and Brisbane. But economic planning in its modern sense is only two decades old. Really speaking the concept of central planning as an instrument of economic policy begins from 1928 when U. S. S. R. launched the programme of industrialization. And as such the technique of planning with which we are most familiar is planning for abnormal circumstances, e. g., either to overcome the difficulties created by the depression or to plan for war. It is mostly this sort of planning of which the world has an experience.

The idea of long-term planning is an outcome of the recent policy of resource conservation followed by countries which are rich in natural resources, e. g., the policy of conservation followed by U. S. A. since the depression. It implies not the exploitation of the natural resources for the benefit of the present generation but a policy of maintaining permanently their productive capacity so as to benefit the future generations likewise. It may be of interest to examine the correctness of the use of 'long-term plans' in this connection.

Before examining the issue some clarifications will be worthwhile. Though the case of anti-planners seems to have been equally well established as those of planners, specially after the publication of 'The Road to Serfdom' by Professor Hayek and of 'Ordeal by Planning' by Professor Jewkes, yet the case of the latter, if dogmatism is avoided, seems to be more valid. Really speaking the world has hardly any experience of peace time planning except a very short experience of Britain in this respect which can barely serve as a lab-specimen. Since it is not intended to examine this issue here let us assume that the case of the planners is more sound than that of the anti-planners for considerably long in future. Secondly, such ideas as rural planning and urban planning, village planning

In this plan 29% of the additional production is due to recurring measures such as manures and fertilizers. It would be ideal to plan permanent measures for the entire quantity.

It may be noticed that the estimated additional yield is 7000 tons more than the deficit to be wiped out. This makes allowance for failure on account of unforeseen causes; also it must not be overlooked that some part of the production of 1946-47 was due to distribution of fertilizers etc. and we have to keep up this to achieve our target over the production of 1946-47. It is, therefore, necessary to plan with little margin.

EXPLANATORY NOTES ON THE SCHEMES

1. Minor Ahars, Pynes and Bundhs

Minor irrigation scheme for Ahars, bundhs and pynes, it is proposed to construct 16,000 ahars,, bundhs and pynes before the end of December, 1951. The target is 6500 in the current year. 6500 in 1950-51 and 3000 in 1951-52. The cost of these ahars, pynes and bundhs at the rate of 2000 for each work comes to 320 lacs of rupees of which 160 lacs will be recoverable from parties. The remaining 160 lacs will be borne equally by the Provincial and Central Governments. The provision made in the existing sanctioned scheme will have to be suitably altered. The Minor Irrigation Works are now proposed to be executed by Revenue Department.

2. Medium Irrigation Works:-

So far attention has been concentrated on very big and very small irrigation projects. It is now proposed to take in hand the works in the medium group which are estimated to cost on an average about 20,000 rupees. Such works will not only protect the paddy crop but in most cases will provide irrigation during rabi season on a scale smaller than during the kharif season. The demand for this category of work has been voiced. It is estimated that such works may benefit about 2,000 acres of land giving an additional yield of 2,000 x 5 maunds equal to 366 tons per work.

It is proposed to take up 30 such works in 1949-50, 50 such works in 1950-51. These works will have to be planned by the staff of the Agricultural Engineer and recommended by the Collectors. The total cost of such works will come to 16 lacs of rupees, half of which will be realised from the parties benefited and other half will be given in the shape of subsidy.

3. Surface Percolation Wells:-

In two years the total target is 9000 wells. This scheme is covered by the existing sanction.

4. Open Borings fitted with Rahats:-

It is proposed to increase the number of boring plants to 250 in the first year and if the demand justified to 550 in next year. The cost on account of subsidies on 8000 proposed borings will come to Rs. 18 lacs. The total cost of the scheme along with the cost of the staff comes to Rs. 71.5 lacs. A separate provision of Rs. 8 lacs in the P. L. Account of the Agricultural Engineer is necessary for purchasing pipes etc.

5. Tube-well Schemes:-

It is proposed to purchase ten mechanical rigs for sinking tube-wells. Two hundred and ten tube-wells will be sunk. Sanction exists for the payment of subsidy in the existing scheme. As the scheme progresses, additional funds if necessary will be applied for, to meet the cost of

subsidy. To build up a suitable organisation which will keep the rigs continuously working, proper staff is provided, the total cost of the scheme comes to Rs. 14.1 lacs. A sum of Rs. 12 lacs will have to be provided in the P. L. Account of the Agricultural Engineer for the purchase of pipes strainers.

6. Lift Pumps and engines for Lifting water from Streams and Rivers:-

For lifting water for irrigational purposes from small rivers, streams, nallas ditches and tanks etc., it is proposed to sell several hundred portable pumping sets throughout Bihar. These portable pumps and engines mounted on a trolly will be installed at suitable places and sold to the cultivators at half the cost, the other half will be met by the subsidy 50% of which is eligible for a Central grant.

It is proposed to distribute 3 sizes of pumps namely 10-12 thousand gallons capacity 20-25 thousand gallons capacity and 40 thousand gallons capacity depending upon the source of water supply. Each pump and engine will be worked for a week where it is to be used, and the owner will be taught the running of the engine and the pump. Quotas will also be arranged for power kerosene. The necessary staff will be maintained in each district to quickly repair the pumps and oil engines.

The subsidy on these pumps will work out to 11.3 lacs of rupees, the total cost of the scheme being 14 lacs.

7. Lift Irrigation and Canal Works:-

Details will be furnished by the Irrigation Department.

8. Drainage of Chaurs:-

Details will be furnished by the Irrigation Department

9. Land reclamation by Revenue Department:-

Details will be furnished by the Revenue Department.

10. Land Reclamation and Farming by The Agriculture Department

It is proposed to set up one Tractor Reclamation Unit capable of reclaiming 10,000 acres of land at a capital cost of Rs. 3 lacs. If the existing equipment is utilized the cost can be reduced by 1,45 lacs. The recurring cost comes to Rs. 72,000 per annum. In three years it will reclaim 30,000 acres of land.

For the follow on cultivation it is proposed to set up three 10,000 acre farms. The staff of two farms will be recruited in the first year so that in the second farm trained staff is available and mistakes are avoided. The staff for the third farm will be recruited in the second year. No supervisory staff has been provided for in the reclamation unit, as the Farm staff will be available for this purpose.

For the three farms a Central Workshop and a hospital have been proposed. Each 10,000 acres Farm will have ten self contained Units of 10,000 acres each.

Since the staff will have to work in Purnea District in undeveloped areas, such scales of pay have been provided for the non-gazetted staff as will attract good candidates.

These three commercial farms will be completely mechanised and will serve as models for mechanized farming. They will also provide facilities for large scale multiplication of seeds and for training persons in mechanized farming.

The capital cost of these farms includ-

and city planning, agricultural planning and industrial planning, economic planning and social planning, etc, are simply narrower concepts of planning. In a wider sense and for the peace time, planning cannot and should not be attempted in the separate segments of human life. It should aim at human happiness and progress, and should cover life as a whole. Thus when we talk of any one—economic or social planning—others are included simply by co-existence.

Now let us start with a simple analysis of economic planning in two broad catagories—planning in abnormal or exceptional circumstances and planning in normal or peace times. In the former case planning is characterised by a singleness of purpose. The measures aim at solving particular problems created by particular abnormalities. And hence there is no difficulty in characterising them as short-term plans. There is, however, a difficulty in associating the concept of 'long-term' with the latter.

Central economic planning as a permanent structure for the peace time implies a deliberate and conscious direction of major economic decisions aiming at economic stabilization and social progress. By presumption it implies to plan wisely resulting in greater human happiness. Even in the present Epharmological stage of social evolution when man's powers are pervasive, much less to say of the Ecological and Etiological stages when human powers were merely persuasive and evasive, human progress is only a measure of man's adaptation to his geographical milieu. The extent of human progress and the mastery over nature is only a measure of man's obedience to it. The pattern of economic society and the nature of economic activities in their various phases—production, exchange, distribution and consumption—are the outcome of a combination of two things: Natural resources serving as the warp and a particular combination of labour, capital and organization serving as the woof. But it must be noted that the former serve merely as opportunities for the application of the latter. Thus it is the particular combination or relationship of the latter which mostly brings about a particular pattern of economic society. Planning implies a combination of all the forces in the latter group in a particular relationship so as to bring about the desired results. And so long as a particular framework or set-up continues the particular policies and plans, which will be suitable for that pattern will be meaningful. And as soon as that set-up is changed those plans and policies will be rendered unsuitable and will become a misfit. Thus planning is limited only to the duration of a particular set-up. In a new framework or a fresh environment fresh plans will be required. (By the way it may be realized that the new framework will not be absolutely different yet much different so as to require a fresh economic policy and plan).

The dynamic character of the economic forces implants every pattern a temporary character. Moreover, the environment is susceptible to many violent shocks which occur too frequently. During the last twenty five years the world has witnessed at least three such shocks, viz, the first World War, the great Depression and the second World War. In our case in addition to these we may add a fourth one—Independence and the Partition. Similarly if the cases of different countries are examined

separately perhaps the frequency of such shocks may be greater.

Every one of such shocks shakes the economic structure violently putting it out of gear and fundamentally changing its mechanism. By way of illustration we may mention a few of the consequences of the II World War. The decline of industrial production almost everywhere, specially in Europe, and its phenomenal expansion in U. S. A. resulted in the exports from America to the rest of the world and thus dislocating the pre-war commercial equilibrium of trade and putting the world's economic balance out of gear. A conspicuous change in Britain's trade with the continent is that today she sells more to it than she buys from it. Besides the enormous flow of sterling from U. K. to the continent, which enabled the continental nations to purchase either in the sterling zone or in the dollar area, (since pounds were convertible into dollars) having stopped and Britain having lost her invisible income from overseas, pounds are no longer convertible into dollars and the result is that the continental nations cannot buy from the dollar area. In the case of India the structure of the foreign trade has been considerably changed. The policy of restricting the area under jute and cotton before the partition has to be changed after it. Our food economy has assumed a new shape and our strategic economy is no less conspicuous now. Instances can be multiplied to show that such phenomena transform the whole economic set-up and put into force new trends and create new atmosphere. And every such new atmosphere requires fresh incentives and fresh plans. Thus at the most planning can be made only for the duration of a particular set-up and it must be temporary.

RURAL LEADERSHIP THROUGH RURAL UNIVERSITIES

By. Dr. K. N. Kini

IN almost all schemes of rural reconstruction started in India, the initiative has been taken by the urban people, the programmes have been chalked out by them and the working out of the programme is dependent mostly on them too. If they do not visit the villages, supervise the works on hand, take stock of the progress made and give directions for further advancement, the schemes crumble. The reason is that the desire for betterment of life does not emanate from within the minds and hearts of the rural people nor do their programmes originate from their brains. They are mostly illiterate or are not well educated. I have been watching the various schemes of rural reconstruction in our country for over thirty years and have taken and have been still taking active part in some of them and have been initiating students and teachers to participate in village up-lift. The moment our backs are turned on the villages, the enthusiasm of the rural folk gradually wanes and the work done is effaced instead of its being followed up. Evidently we have not been succeeding in permanently training the villagers in the art of bettering their social, economic and cultural life.

A new technique should be devised, a new approach should be made for achiev-

ing the prosperity of the villagers. We must enable the rural population to have the inner urge to improve their life conditions; and this inner urge can only be created through the process of education whereby they will be made to realise how low their conditions are in respect of food, clothing, shelter, culture and defence.

Opinion is gaining ground that a system of free and compulsory basic education as propounded by Gandhiji should be introduced throughout the country for all children between the ages of 6 and 14 years and rural children will also benefit by this scheme. The chances are that a halt will be made at the end of this stage as far as a considerable number of rural children are concerned. This halt should be avoided. In continuation of basic education, the rural children should be given the opportunity of studying in the rural high schools of at least two years' duration, (that is until they will be 16 years of age) where about two-thirds of their time will be spent in studying two or three most important allied rural occupations from a practical point of view in relation to modern science, mathematics, commerce and art and a third of the time will be devoted to languages and citizenship education and compulsory military training.

We have been accustomed to thinking that culture arises only through prose and poetry and history and geography. If by culture is meant cultivation and development of the intellect, then a scientific study of occupational subjects coupled with the history of industry and commercial geography should afford considerable culture to the individual. In truth, properly organised education should not differentiate between cultural and occupational studies; on the other hand the two should be inter-dependent and interrelated. A poor country like ours will be most benefited if all the high schools in the urban areas are also founded on this principle of non-dualism of culture and vocation, urban occupations being introduced in urban high schools.

While rural high schools will only train rural youths for leadership at a common-place level, on account of the common-place education they will receive in the rural high schools, it is very necessary to think of a higher type of rural leaders with a higher outlook on life, with a wider and more intensive knowledge of their occupations, and with a more detailed study of their environmental conditions, that is, they will have to be educated through well devised courses at the university level imparted in colleges which would be established amidst them. The method adopted till now, namely of attracting the rural youths to the urban colleges during the past 90 years of the functioning of our present universities is a colossal failure, in that the rural people have not been given education suited to their requirements; but on the other hand, they have been given education suited to urban life which makes them shun rural life altogether. Thousands of well-to-do rural families have migrated to cities and towns with the sole object of educating their children, and they have not gone back, with the result that the more cultured people are lost to villages and the latter have been only absentee land-lords who visit their farms only to collect their rental from their tenants, who are left without any leadership in enhancing their occupational competency. As a matter of fact, the present universities have not touched the sympathetic chord of our

national life, urban or rural, and the savants live in a world of their own and have not influenced the life, thought and action of most people, especially in villages. The Universities have drawn their wealth, directly and indirectly from the villages and have given back to them little or less than little.

The rural students that have been educated in our present day universities and colleges are loath to go back to the villages partly because the villages have not got those amenities of life to which they become accustomed to, while they study in their urban colleges, such as cinemas, the libraries and the reading rooms, the radio, the hotels, the parks and play-fields and above all that educated and fashionable society with which they are associated but is, alas, non-existent in the rural areas. The villages are, therefore, gradually depleted of their intelligentsia and the more well-to-do and the more adventurous; and because the intelligentsia, the well-to-do and the adventurous are not there, nobody in the village thinks of improving village conditions. We should therefore establish colleges and universities in rural surroundings where the subjects of study will be those of immediate benefit to the rural population, mental, moral and material.

The curriculum should consist largely of occupational subjects obtaining there, viz., agriculture, animal husbandry, fisheries, forestry, road-making, small scale industries on modern lines, rural electrification, poultry farming etc. Science, mathematics, art, occupational civics etc. related to the occupations should be taught in a very practical manner. Very few realize the advantages of small scale industries distributed in their thousands in the villages. About sixty miles from New York, I saw a bund built by a company formed by half a dozen villages across a rivulet, not more than 15 ft. high, for generating electricity supplied to these villages. The waste water is sold for agriculture. The tank breeds fish which is also sold. The company makes profit and pays an annual dividend. In India there are tens of thousands of such opportunities.

Two-thirds of the time of the students should be devoted to the occupational and related subjects because the rural leaders of tomorrow will have to be experts in rural occupations which will enrich the material life of the people which at present is at its lowest ebb. One-third of the time may be devoted to bookish subjects like the languages, citizenship, current affairs and so on. I am strongly of the opinion that languages should also be built round and keep close relation to the occupational subjects, though literature specially of the regional language may be studied apart from the occupation for its own sake.

The education of the rural women is even more important. Unlike in urban areas, the village women work shoulder to shoulder to their men folk in almost all rural vocations. Therefore, it is most likely that if proper occupational courses are organised in rural schools and colleges, the women will also enrol for them and take a leading part in enhancing occupational competency. Moreover owing to dearth of medical aid in villages the rural women should be specially trained in home-science, nursing, household medicines, child-care, etc., and make the rural home really worthwhile to live in.

We must thus produce leaders among village women also. The village women do not acquiesce in the leadership of the urban women, because the up-bringing, manners and behaviours of the latter are quite foreign to those of the former. There is always a suspicion in the minds of the village mothers about the town mistresses whom we post to rural girl schools. Sometimes these schools get depleted of girls because of even a little indiscretion on the part of mistresses which may not produce any effect in like institutions in the towns. Some village mothers openly say, "We do not want our girls to be trained by these coquettes from the towns". If the education of the village women should go apace and if their living conditions are to be improved, we must produce teachers and leaders from among the rural women educated in the rural schools and rural universities.

For those students who do not wish to take the occupational subjects, there may be courses like Rural Economics, Rural Sociology, Rural Education, Rural Co-operation and so on which will give their culture a rural bias.

In my article on "Ruralising University Education" which was published by Mahatma Gandhi in "HARIJAN", dated October 13, 1946, I have dealt at some length on what should be the chief aims of rural universities: (1) The graduates of the rural universities should be enabled to eke out a decent living in rural parts. (ii) They should be of great help to the masses in producing food for the nation on most up-to-date lines. (iii) They should be experts in some one or more village occupations or industries so that they may be leaders of thought and action in these fields. (iv) It should be made possible for them to get the highest degrees, M. Sc. and Ph. D. by undertaking investigations and research in their own special subjects. (v) When the time comes for employing workers and experts in nation-building activities in the rural areas, the alumnii of the rural universities should be preferred because they have been brought up and educated in rural areas, and they will have greater sympathy towards and spirit of service of the 85 per cent of the population of the country who reside in villages. (vi) A rural University should be open to adults of all ages to take courses which will be of use to them in their daily life though these courses may not lead to getting degrees. (vii) Passing by individual subjects as and when the students desire, should be encouraged. Special classes to suit the time of the villagefolk before or after their daily work should be organised. (viii) No fees should be charged in the rural universities and the cost incurred should be defrayed from State funds and private benefactions. The expenditure should be regarded as an insurance against famine, pestilence and disease. (ix) These colleges and universities should be real community centres. (x) There should be no external examinations. (xi) The medium of instruction should be the languages of the majority of the people of the region. (xii) Headquarters of some departments such as Agriculture, Animal Husbandry, Forestry, Fisheries, Cottage Industries, etc., should be located near these Rural Universities. Then and only then, will our rural life be culturally rich and economically efficient.

About my scheme of rural universities, Gandhiji said that there was much truth in what I wrote. He even remarked,

"I see no difficulty in existing universities conforming to the requirements of the villages, who are India, instead of turning indifferent imitators of the West". On account of the century old traditions of our universities which have been fashioned on the lines of the universities of Oxford, Cambridge and London which are meant for an imperialistic race, it is highly doubtful if Mahatmaji's idea will at all find favour with their managing bodies.

The Universities Commission is now drawing up its report. It has collected much evidence and I am sure that the various people that have given evidence before it must have emphasised our problems of rural education. In my oral and written evidence, I have emphasised the great need for the establishment of rural universities throughout the length and breadth of this great country. I do hope that the Universities Commission will take cognisance of these ideas and recommend a good system of rural university education. The previous Universities Commissions have only recommended the betterment of existing courses, and syllabuses with suggestions here and there for starting professional and industrial courses. Their work may be called more or less *patching work*; but in independent India patching work has no place. The whole system of university education should be revolutionised with a view to bettering the life and culture of not only the 15 per cent urban population but also of augmenting the possibilities for higher education of the 85 per cent rural population, whose great task is to supply the nation with food and to some extent clothing and shelter and also defence possibilities. The nation now is greatly perturbed over the food problem. Not only do the people do not get enough food and sustenance but whatever they get they have to pay fabulous price for. Much of the dissatisfaction in the land is on account of want of adequate food, clothing and shelter. The danger can be easily imagined when it is seen that even women are turning depredators. Unless the University Commission will tackle these questions also along with the problem of affording culture to the nation, they will be failing in their duty to bring satisfaction in the land and to avert a great national calamity which may take place if hunger is not appeased.

In his broad-cast speech of wednesday the 29th June, 1949, on our Food Problem, the Prime Minister, Pandit Jawahar Lal Nehru said, "We must reach down to the farmer in the field. That is, there must be links from the top policy making place to the farmers who have ultimately to carry out that policy. *The farmer must understand and most willingly co-operate*". These are memorable words. They are the crux of the whole problem. The mind of the farmer is not a cultivated one. He is unable to understand the full implications of modern scientific agriculture. He is often callous to advice. He should be educated to as high a degree as possible, especially with reference to his own occupational subjects bringing modern science and industrial knowledge to bear on them. Unless his mind works quickly and comprehends the full implications of our policy and the problems of the nation, optimum results cannot be expected. Leaders at various levels should be produced from amongst them because they heed their own Leaders rather than those outside their fold. Therefore, it is high time that a net work of Rural Universities are established in the whole country.

Writing on my scheme of Rural Universities referred to above, Mahatma Gandhi wrote in 'HARIJAN SEWAK' of 13th October, 1946, " If the Government at the Centre and in the Provinces should adopt these suggestions, it would be very useful.....I am of opinion that the Urban Universities may also undergo a change." I make a fervent appeal that the advice of the Father of the Nation may be taken seriously in these serious times. *These are times for being quick and sure and for hastening hastily.*

FACE THE FACTS

By G. B. SirDeshpande

IT appears unintelligible why India with centuries of experienced skill in Agriculture should be unable to increase the food production by ten percent in the present context ? The present high price of food-stuff must itself be a good inducement to produce more. If high price for agricultural produce is unable to appeal to the peasant, what else can appeal to him ? It is clear from this that obstacles in the way of the agriculturist are so very compelling as to make him ' helpless '. This " helplessness " must first be removed if he is to produce more. Better production results from better handling of the business of agricultural production. All the energy of the State must be directed towards removing this ' helplessness. '

Practice is better than Precept

There has been enough of precept. Every child in the Country knows and *feels* the shortage of food in the country. It has also come to know of compost manure pits. It has also come to know of money being granted to sink new wells. But it does not see any field or farm being worked out according to the best methods and producing the maximum quantity of grain yielding greater monetary gain to the worker. He sees everybody groaning under insufficiency of working capital, inefficient Labour...erratic rain-fall...at the end of the year, the spirit is damped of its ardour and thinks of curtailing the activity to minimise the loss. Inspite of high prices, agriculture is still not profitable with its present mode of operations. The odds are too many. The agriculture does not give a decent living to the agriculturist. Instead of becoming the best of professions, it stands last in the list of desirable avocations.

Demonstration farms realising good profits from agriculture are a necessity. Then only will the Government realise the actual extent of working capital required to run a farm, the need for employing labour saving implements, partial mechanisation to do the hardest and monotonous agricultural operations. Then only will Government realise the immensity of work to be done to increase production. A demonstration farm in the midst of every three miles which can be easily seen by the agriculturists, is a necessity. It will be in the midst of a surrounding with a similar rain-fall, soil-structure, and marketing difficulties. When such farms will prove profitable to the Government, take it, every farm will improve in the locality. An ounce of practice is better than a ton of precept. Every Provincial Government must be made to establish such a demonstration farm all over the similarly situated parts of the province. Such farms will suggest the realistic approach to the problem of more production. The Government must face the facts.

Our Provincial Governments evince great pleasure in nationalising Motor transport, Electric Power Houses,...destroying the public capital invested therein. Why not take up agricultural industry in the public interest? Then only will the administration feel the pinch and learn to remove the impediments. Such demonstration farms will settle all questions of economic holding, the need for working capital, the living wage to the agricultural labour, land-taxation, the need for quick transport, the abolition of drudgery in farm work, the possibility of subsidiary occupations etc.

The mark of wisdom lies in first doing a thing efficiently and then expecting others to follow it.

FARM LEVEL OF LIVING IN THE UNITED STATES

By Howe Bancroft

WHAT is meant by the term, farm level of living ? The level of living of a farm family is its final measure of success or failure in getting what it wants from agriculture, It includes not only the things it buys with its own income, but also the public facilities provided by the community in which it lives.

Statistics and figures on such matters as farm production and income, extent of rural electrification, etc., mean little or nothing in themselves to farmers. What they are interested in is what goods and services they get for their work as farmers. How many radios, cars, washing machines, and a host of other items that go to make up a full, free, and secure existence do they have ?

The U. S. Department of Agriculture and a number of other agencies have made many studies over the years on this subject, compiling facts and figures on just what goods and services the American farmer has. One overall set of statistics should be given at the outset: the Department of Agriculture assigned the figure of 100 to the year 1930, and, taking this as the farm-operator level of living index, the department found that this figure stood at 107 in 1940, and then took a spectacular upward jump to 133 in 1945. Later, studies indicate that even further increases have since been made.

"Level of Living" Described

The department has also set forth a description of just what it means by level of living, showing that it consists of a good deal more than merely an enumeration of a selected list of material assets.

It does, of course, first of all include such items as food, shelter, clothing, and medical care—things that have a genuine "survival value" and are necessities of life everywhere in the world.

Second, it includes such conveniences as household furnishings, labour-saving devices and equipment, and the services of professional people other than doctors. It also means things that tend to reduce

isolation, such as reading matter, the radio, telephone, and automobile, postal service, good highways, the railroad, the bus, and every other convenience which tends to cut down the farmer's isolation.

Third, it includes the availability of such facilities as schools, hospitals, churches, and recreation centres.

Fourth, it means the amount and distribution of time left for leisure, recreation, and self-improvement activities.

Fifth, it includes security—the degree of assurance that these goods, services, and rights will continue to be enjoyed inspite of illness, adversity, and advancing age.

Finally, it includes independence on the land, and the opportunity for improvement of one's own lot and the opportunity for still further progress for one's children.

Probably the most important single factor, aside from increased farm income, behind the recent extremely rapid advance in the farm level of living, has been rural electrification, which increased with extraordinary rapidity after the government, under President Franklin Roosevelt, created the Rural Electrification Administration in 1935.

Farm Use of Power Grows Enormously

A great number of the devices by which the farmer has increased his level of living would be impossible without electricity. And while in 1935 only 11 percent of American farms had electricity, in 1948 this had risen to more than 68 percent, effecting a revolutionary change in farm levels of living.

Of course, the central question is just what goods and services the average American farmer has, how this compares with what he had a given number of years ago, and what his prospects are in the future.

The farmer of the last generation would scarcely recognize the farm family of today, so greatly has its standard of living changed. Rising farm incomes, technology, and government programmes have lifted countless hours of drudgery and loneliness from the shoulders of American farmers and their families.

Inside the home increased income has meant new furnishings and equipment. Rickety chairs, uncomfortable beds, worn-out rugs, and a host of similar items have been replaced. In the kitchen the housewife no longer spends long hours scrubbing clothes, but simply turns a switch to start the electric washer. Electric ranges have replaced the cumbersome wood burning stoves; food is kept cold in an electrical refrigerator; vacuum cleaners have replaced brooms; and sewing machines the old hand work.

The family now has an automobile and decent roads over which to drive it, instead of slogging through the snow in a horsedrawn wagon. Radios, newspapers, and magazines now bring the latest news and entertainment. There is more living space for everyone, because the number of rooms in the farm house has increased. There is often an inside bathroom, too, and perhaps a telephone. With running water there is no more trudging to the well and hauling water back in buckets.

Outside the home, rural community services and facilities have improved. Schools, churches, and hospitals are closer to the farmer. State and federal agencies unknown to the older generation are now providing services and facilities not

only for farming but also to improve the farm family's standard of living.

Statistics Bear Out Improvements

That statistics bear out this picture can be shown by taking a list of selected items making for better farm-family living, and showing how they have increased on American farms.

To begin with automobiles, the largest increase in automobiles in rural areas occurred between 1920 and 1930, although even in the early 1940's, despite the war and the consequent shortage of cars, gasoline, and parts, farmers generally were able to keep their autos in operation or replace them. In 1920, approximately 31 percent of all farms in the United States had automobiles; by 1930, this figure had nearly doubled, reaching approximately 58 percent. In 1945, the latest year for which there are figures, it showed a further gain to 62 percent.

The value of an automobile, both for business and pleasure, is of course largely dependent on the number and condition of the roads in the neighbourhood. The percentage of farms located on all-weather roads has increased roughly in the same degree as the automobiles themselves. The proportion doubled between 1925 and 1940, rising from approximately 23 percent in the earlier year to 46 percent in 1940, and increasing rapidly to 62 percent in 1945.

Approximately three farm families out of every four have radios in their homes. By 1940, ownership of radios was nearly three times greater than in 1930, when only about 21 percent of American farm families had them. Between 1940 and 1945 the figures increased another 21 percent. This unparalled spread of a new device indicates the great importance attached to radios by farm families. A radio is relatively inexpensive, and even for farms that do not have electricity, battery sets are available. Very recently, farm families, like urban families, have been buying television sets.

Here, briefly, are some other figures of interest:

Running Water—Unlike electricity, which is usually a community development, running water in the farmhouse almost always entails considerable individual expense, particularly in the digging of a well. However, even in this field there have been marked gains. The percentage of farm operators reporting running water in farm dwellings rose from 10 percent in 1920 to 30 percent in 1945.

Housing—The number of rooms per dwelling in farm homes has increased, while the number of persons per room in dwelling units has increased, according to the U. S. Department of Agriculture.

Refrigeration—The proportion of farm families reporting ownership of mechanical refrigerators doubled between 1940 and 1945, rising from 15 to 30 percent. In the same period the figures on iceboxes showed an increase of from 18 to 28 percent. A spot survey recently made indicates that the percentage of farm homes having refrigerators had risen to 38 percent by July 1947. Thus 66 percent of American farms have some form of refrigeration.

Household Furnishing and Equipment—Farm families have increased their expenditures for these items enormously in recent years. A check of farm families keeping accounts showed that in 1947 approximately 14 percent of their money went for furnishings and equipment for

their homes. The total spending for this purpose was three and three-quarters times the 1937-40 average.

Medical Care-Expenditure for this item, which includes hospital service and medicines as well as physicians, showed continued increase. A survey made in 1947 indicated that farm families were spending more than two and a half times as much per capita on medical care as they spent in the years from 1937 to 1940.

Newspapers and Magazines-Seven out of every 10 farm family homes take either a daily or a weekly newspaper; nearly three-fourths receive one or more magazines. About four out of five farm operators' homes have sewing machines; approximately one-half have power-driven washing machines; and slightly more than one-half have self-heating irons. About 25 percent of all farms have vacuum cleaners.

Many Organizations Serve Farm People:-But in addition to all these goods, there is an increased number of organizations and agencies serving American farm people today. The nature and types of these organizations have become more specialized with the increasing need for organized activities. There is a steady movement of schools, churches, and other institutions serving farmers from the open country into villages and towns, where they are more available. State and federal agencies not in existence a few decades ago are now serving farmers.

Producers' farm supply or marketing cooperatives, agricultural conservation associations, soil-conservation districts rural electrification cooperatives, general farm organizations, and agricultural extension services are found in most counties throughout the United States.

As for the future, the U. S. Department of Agriculture, declared in a report made early in 1948: "If the nonfarm economy is reasonably prosperous, farm family levels of living will be considerably higher than before World War II and will continue to improve."...USIS

—*'American News File'*

CATTLE IN INDIA—PROBLEMS OF ITS DEVELOPMENT

By H. J. Makhijani

AGRICULTURE is by far our largest industry and cattle wealth an integral part of it. According to recent estimates of the national wealth, income from agricultural and allied industries is estimated to be of the value of Rs. 5000 crores annually and the contribution of cattle industry being nearly 50 per cent. Cattle and agriculture industries are complementary one helping development of the other. The Royal Commission on Agriculture (1928) very appropriately summed up the importance of our cattle industry in the following words: "It is necessary to recognise the obligations under which the country stands to the cow and to her off-spring, the trusty ox. Without the bullock no cultivation would be possible, nor the produce could be transported".

Like the agriculture industry, the cattle industry has also not kept pace with the growing population and the increasing requirements of bullocks and milk, with the result, there has been a serious shortage of both good bullocks and milch cattle. The Famine Enquiry Commission

while discussing the progress of the Grow More Food Campaign (1945, P-19) recorded that ".....the cattle position shows signs of deterioration and there are complaints of shortage particularly of plough cattle. The prices of cattle are very high and many cultivators find it difficult to replace losses. In Assam the position is described as acute and in Bengal a serious shortage is reported.....,the danger exists that further deterioration may result in a reduction in the area under food crops..... ....." It will thus be realised that the importance of the cattle industry in our national economy is indeed great and calls for a sustained effort to develop it so that good bullocks should be available in large numbers for better cultivation of the land and increased food production and more milk for better nutrition of peoples.

Deterioration Possibly Going On

There have been complaints regarding decline in cattle wealth since the later part of the 18th Century. The First Indian Famine Commission recorded (1880, P-51) ".....fears however have been expressed that the grazing lands have already in many parts of the country been injuriously curtailed by being turned into errable lands". The Royal Commission on Agriculture (1928. pp-191-2) on the same subject have observed that, "The complaint that the Cattle in India are deteriorating is an old one. It is mentioned by a traveller in India at the end of the 18th Century and it was a common topic of discussion throughout the 19th Century.....On the evidence placed before us, we can, however, state that the difficulty of securing good bullocks and good cows has increased in recent years; thus, in relation of the existing demand, the quality of the supply has deteriorated. There was also much evidence of the fact that the conditions for the breeder of cattle are now more difficult than formerly. While the evidence of the witnesses points of the probability that the deterioration is going on, our own examination of the position, created primarily by the increasing demand for bullock owing to the extension of the cultivation leads us to the conclusion that the conditions have arisen, and are already at work which cannot fail to prejudice livestock and that cattle such as deplorable animals now to be seen, for example, in parts of Bengal and Central Provinces, must become more common unless substantial changes in the existing management take place". Two decades have passed since this report was written and during the period though there has been some expansion in the animal husbandry and veterinary departments and in the field of research, diseases control, distribution of bulls, but the fundamental factors that have caused the decline in the cattle industry have not yet been tackled to any large extent.

Present Position of the Industry

The average efficiency of our cattle is indeed very low. An enquiry regarding cattle and milk production conducted by the Indian Council of Agricultural Research in seven cattle breeding tracts (Misc. Bul. No. 22, 1939) revealed that an average daily hand-drawn milk (i.e. after leaving for the calf) between calvings for the seven centres was 1.73 lb. for cows and 3.99 lb: for buffaloes and the average interval between calving 18.20 months for cows and 18.03 months for buffaloes. The same enquiry revealed that on an average a pair of bullocks was required for 14.6 acres cultivated land. Taking an average annual feeding cost of a pair of bullocks as

Rs.500/-,depreciation on its value as Rs.80/- and interest on its purchase price Rs. 24/-, the total annual maintenance cost works out to Rs. 604/- or Rs. 4 1/6/- per acre. On the other hand the return per acre at an average yield of 6 maunds at Rs. 10/- per maund and 10 maunds straw etc. at Rs. 2 per maund works out to Rs. 80/-, thus leaving Rs. 38/10/- only to the cultivator for the cost of seed, use of implements, land assessment and his family labour. These are the averages for "seven typical breeding tracts where breeding for work bullocks as well as a certain amount of milk production are carried on by cultivator".

Sen and Krishnan in 'Livestock Industry of India' (Indian Farming Vol. III No. 6) have pointed out that".....inspite of the immense value of the contribution of our farm animals to our national wealth, we have every reason to be perturbed at the pitiably low level of efficiency that every single phase of the industry reveals". Santokh Singh has corroborated this view in his survey of cattle in Rohtak District of East Punjab (Board of Economic Enquiry, Punjab, Pub. No. 41, 1939) and quoting Darling (Wisdom and Waste) has agreed with him that ".....seventy per cent of the cows there do not pay for their up-keep". The Expert Cattle Committee appointed by the Bombay Government (1940) after careful consideration came to the conclusion that "..... ...the cattle of the province are on the whole not an economic proposition as over 80 percent can only be regarded as a drain on the country".

Great Potentialities for Development

While the average efficiency of our cattle under the present systems or management is rather low, in well-managed herds, the average performance has been very much higher, which has proved beyond doubt high potentialities of our cattle both for work and milk production. In herds of Sahiwal Cattle maintained at the Indian Agricultural Research Institute, New Delhi and the Military Dairy Farm, Ferozepore, the average lactation performance has been reported to be well over 4500 lb: against 1344 lb: under village conditions. In a herd of Hariana cattle that was maintained at a sub-station of the Indian Agricultural Research Institute Karnal, the average lactation yield was over 3600 lb: against the average lactation yield of 986 lb: in the Hariana tract. In the Ongole herd maintained on a Government Farm in Madras till about 1931, the average lactation yield was reported to be over 3000 lb: against the villagers' average of 1236.4 lb: In the Kankraj herds maintained at Chharodi and Surat Cattle Breeding Farms, the average lactation yield has gone upto 2500 lb: against the villagers' average of 919.5 lb:

Besides these potentialities regarding their milking capacities, the other features of our cattle are: the male is an efficient work animal and the cow a useful milch animal; they are economical to maintain and can thrive under unfavourable environmental conditions; and have a natural resistance to various cattle diseases. It is thus clear that there is a great scope for substantially developing the country's cattle wealth both as regards draught qualities and milk production.

Farming Systems Determine Types of Cattle

Development of agriculture has a profound effect on the development of other allied industries. Types of farming determine the requirements of cattle

and their types. For agricultural production, besides providing power for agricultural operations, soil fertility must be maintained at a high level and by-products of farming should be efficiently utilised. Under the present economic condition of the cultivator, his only possible source of power is cattle, his available means of increasing soil fertility, is by efficient utilisation of farm-yard-manure, and the utilisation of the by-products of his farming by feeding to his cattle and getting a return in form of work, milk and growth. With adoption of intensive methods of cultivation for increased production, his requirements for bullock power would increase and so also his requirements for manure to maintain soil fertility, besides there would be increased availability of farm by-products and need for their efficient utilisation. Experience has shown that the best system of farming is mixed farming with cattle as an essential part of it to keep up the fertility and help in harvest of heavier and healthier crops, and also secure full employment of the farmer and his family. Russel (Agrarian Problem from the Baltic to Aegean) is of the opinion that ".....the lack of capital drives the peasant to grain production, the cheapest but the least lucrative of all arable systems. It is suited to the wide open space of North America, Australia, or the great plains of U. S. S. R. where there is for more land than can be closely occupied, but is less appropriate to the regions where there is pressure of population on land..... grain production in Eastern Europe will have to be largely replaced by systems producing most of the so-called protective foods. The change will require more labour and the use of more fertilizers and better animal husbandry and will therefore yield far higher returns per acre and per man than grain. It will then give a higher life to the country-man". Indeed, the low economic position of the cultivator has tended to a substantive type of farming with a very small return. Another factor that has attributed to this type of farming is poor marketing and transport systems under which perishable articles like cattle products, fruits and vegetables cannot be marketed without much loss.

Olver (Agri. & L. S. in India, Vol. VIII, Pp. 492- 502) while commending 'mixed--farming' as the best system of farming for India, wrote, "It has in fact been found in India, as in other countries, that if full advantage is taken of the manurial effect of their urine and dung, the gross return from the land and profits per acre can be greatly increased by well fed livestock under a balanced system of mixed farming. Moreover, properly managed livestock, besides increasing the return from the land, has the effect of equalising the income over a series of years, while in mixed-farming a large portion of the return is obtained from animal products,such as dairy-products,without which it is not as a rule, practicable to provide a satisfactory diet for the people, and at the same time comparatively high priced work-cattle can be bred. For these reasons, I have for years past advocated that the mixed-farming, with reasonably high yielding cows, should be adopted wherever possible, as likely to be the only way of enabling agriculture in India to meet the ever-increasing pressure on land." Ghatge and Patel in their survey of farming in Gujarat tract of the Bombay Presidency (quoted by S. C. Das Gupta, 'Cow in India', Vol. 1., p. 339) found that "farming alone cannot maintain them (cultivators)

unless it is supplemented by some occupation like dairying which utilises advantageously the by-products obtained in farming and also secures greater employment to both male and female members of their family.

Low Economic Position Great Handicap

The economic position of the cultivator has remained the lowest all throughout. Rao (National income of Br. India for 1931-32) estimated the average annual income per occupied person in agriculture at Rs. 133/-, those in industry Rs. 195/-and those in services, trades etc. Rs. 307/-; the per capita income for rural peoples was estimated at Rs. 51/- and for those in Urban areas at Rs. 166/-. The per capita annual income for both the urban and rural peoples according to estimates (Eastern Economist, 1948) was Rs. 67/- in 1939-40; Rs. 112/- in 1942-43 and Rs. 160/- in 1947-48, and when adjusted to the Bombay cost of living, the relative for 1942-43 was Rs. 70/- and for 1947-48 Rs. 62/-. There is no doubt that the income of rural peoples has slightly moved up and the great disparity between the per capita income of the rural and urban peoples has slightly narrowed down. Even if these figures be not quite correct, one thing is definite that the average income of the cultivator is too-low to enable him to lead a full life. His low economic position has directly affected the scope of his enterprise and his investment in the business has been very limited. He has naturally therefore resorted to substantive type of farming, producing as far as possible his requirements of food and a small surplus of easily marketable commodities. His another great handicap has been lack of easy and cheap credit facilities. The occasional slump in production due to drought, flood or disease, and in prices has resulted in his great indebtedness. The Famine Commission of 1901 (P-94) while recommending the establishment of Agricultural Banks to provide easy credit to the cultivator said ".....the usurious rate of interest that he (Saukar) charges and the unfair advantage that he takes of the cultivator's necessities and ignorance have, over large areas placed a burden of indebtedness on the cultivator which he cannot bear. Passed on from father to son, and continually swollen in by process of compound interest, this burden of indebtedness has become hereditory and retains the cultivating classes in poverty....." On the extent of the indebtedness in Bombay, the Commission recorded, (P-104) "..... The Deccan Ryots Commission of 1876 found that about one-third of the occupants of government land are embarrased with debt that their debts average about 18 times their assessment; and that nearly two-thirds of debt is secured by mortgage of the land.....the money-lenders, in the villages.....paid about one-eighth of the whole land revenue their property having been acquired within the preceding twenty and for the most part of the preceding ten years....." During these preceding twenty years there were series of drought in the years 1876-78, 1891-92 and 1899-1900 affecting agricultural production.

The economic depression of the late twenties, is said to have further affected the economic structure of rural India. The prices of primary produce fell by 40 to 60 percent resulting in lowering of the cultivators income. Writing about this Dr. Ansty (quoted by Ramaswamy, Economic Stabilisation of Agriculture, 1946, p-15) said, "...practically all agriculturists have suffered, but the extent of suffering has

been greatly affected by the degree of self-sufficiency and the extent of dependence upon particular crops. The more commercialised agricultural areas and classes have suffered more than those which are relatively self-sufficing....."

The rise in prices of primary products since the war years, possibly benefited the agriculturist to some extent till about 1943, when the price index of the manufactured articles had somewhat lagged behind; then suddenly prices of the manufactured articles recovered and for 1944 and 1945 the price index of agricultural products was lower than for manufactured product. In 1946, the prices of the agricultural commodities again recovered. The Gadgil committee on Agricultural Finance (1945) observed, " On the strength of all this evidence it might be possible to hazard the opinion that the total indebtedness in terms of money stood in 1944 at a level lower than that in 1939 but that, at a later date, forces were already in operation leading to an increase in the amount of this total indebtedness. The upward trend of the prices of agricultural produce appeared to be held in check. The rise in the level of agricultural costs had mostly caught up with the increase in the prices of agricultural produce and had in some instances even passed it. "

Small Holdings Need Small Bullocks

Another feature of our agriculture is small-sized holdings and their fragmentation. Recent data reveals that 80 percent of the holdings are less than 2 acres each and another 30 percent, between 2 to 5 acres each. A very large percentage of these holdings are uneconomic and do not provide full occupation for the cultivators' family and his equipment. This progressive fragmentation and sub-division of holdings, has greatly affected the efficiency of our agriculture, the type of cattle, as the owners have no means to adopt improved farming practices requiring capital. The resources of these cultivators being very limited, they can hardly maintain a pair of scrub-bullocks.

Nanavati (Famine Inquiry Commission, 1945, p-259) holds the view that the proper size of holding is one on which a pair of bullocks can be employed efficiently and fully. Kartar Singh (I. J. of Agri. Econ. Vol: 1, No: 2) has also shown that the most economic size of holding is that which utilises the man and cattle labour fully.

Need for Developing Cattle Feed Resources

It is well known that cattle require definite amounts of nutrients for maintenance, growth, work, milk production and re-production; and if their nutrient requirements are not met they do not function upto their full potentiality, begin to lose in weight and become emaciated and inefficient. The available supply of cattle feeds in the country is too short of the requirements of its vast number of cattle even at their present production level, and this has been the main cause of decline in their productive efficiency. It has been estimated that the roughage supply is sufficient for about 78 percent of the cattle population and concentrates supply for only about 29 percent of the cattle. In terms of nutrients, the supply may be hardly 60 percent of the requirements. It has been a common experience that when village cattle are maintained on adequate rations, they give about 40 percent more milk yield.

The available sources of supply of cattle feeds are ;

(a) Natural grasses on waste-lands, forests, fallow lands and village pasture areas.

(b) Straws from cultivated crops.

(c) Cultivated fodder crops.

(d) By-products of industrial processing, viz., brans, oil-cakes, pulse-chunies etc.

In any scheme of cattle development, the first essential requirement is to adequately develop the country's cattle feed resources. Very little has so far been done in this direction and a great effort is called for to make up the deficiency.

Natural Grazing

The main source of cattle feed is the natural grazing on about 120 million acres cultivable waste land, 60 million acres fallow land and about 10 million acres (out of 62.5 million acres) land under forests. These areas provide grazing for about four to five months of the monsoons. The areas nearer human habitation have naturally been considerably over-grazed, while those further away have been allowed to go waste year after year. No organised effort has so far been made to develop these pasture areas with the result the quality of grazing has very much declined and their carrying capacity very much decreased. The resultant over-grazing has further resulted in depletion of soil by erosion and regeneration of coarse and less nutritive varieties of grasses.

Though the increasing pressure of population on land without any appreciable increase in its productive capacity has made it necessary to plough up more and more of uncultivated land, but it is likely that an equilibrium would sooner or later be reached between cultivated and uncultivated areas. It is therefore necessary to develop the grazing areas into good pasture lands and increase their productivity. This could be achieved by a rational management of these areas including:-

(1) Evolving suitable high yielding and nutritious grass mixtures.

(2) Adopting rational grazing systems, periodical closure of compartments for regeneration of grasses.

(3) Allowing animals in an area according to its carrying capacity.

(4) Study of the grazing habits of different species of animals viz; cattle, buffaloes, sheep etc. and arranging their rotation with a view to maintain uniform grazing.

(5) Cutting and preserving surplus grass for use in the dry season.

(6) Clearing the pasture areas and keeping the weeds and brushes out of pastures.

Straws of Cultivated Crops

This is the second important source of cattle feeds and is getting more important, with the bringing in of more increasing area under cultivation. Though the straws are less nutritious they however offer a unique opportunity of effectively utilising that portion of the plant produce which cannot be used as human food. There are about 178.5 million acres land under food crops, which yield roughly 119 million tons of straw. With improvement in cultivation, yield of both the grains and straws could be substantially increased. Besides further research on food crops, should take into consideration the yield and quality of straws which are also of great economic importance.

Cultivated Fodder Crops

There are about 10 million acres land grown under fodder crops. This source

requires to be considerably developed so as to make available sufficient fodder all the year round. The main handicap to the expansion of cultivation of fodder crops has been the small sized holdings which hardly grow enough grain for the cultivator and his family. However a great increase in fodder cultivation and production could be brought about by evolving quick growing, high yielding and nutritious strains of fodder crops, which, besides maintaining the soil fertility, may also bring a greater return per acre in form of cattle labour, milk production and growth.

By-products of Industrial Processing

Still another source of cattle feeds and by no means less important is the by-products of industrial processing viz: wheat and rice brans, oil-cakes, pulse-chunies, molasses, cotton-seed etc. The production of these highly nutritious cattle-feeds is estimated to be about 4 million tons. This is only about 29 percent of the requirements. The progressive improvement in agriculture resulting in higher crop yields would naturally make available larger quantities of these products for cattle feeding. There is however some diversion of certain quantities of edible oil-cakes as fertiliser. This is indeed a wasteful economy, and an effort is required to be made to use all the available edible oil-cakes for cattle feeding.

Developing Highly Productive Cattle Strains

In developing cattle, it is necessary that purity of breeds should be maintained and their efficiency raised through selective breeding and evolving new strains of greater productive efficiency.

The development of Indian breeds of cattle has been the result of the effort of the indigenous cattle breeding communities in various parts of the country. The progressive reduction in pasture areas, restrictions on movements of cattle breeders and on grazing has very much interfered with their profession with the result that many of them have left it and settled down as cultivators or as labour and their valuable experience of cattle breeding has been wasted. These breeders were always careful to maintain the purity of the breed and raise its performance efficiency.

This progressive decline in the cattle-breeding activity has been the main cause of deterioration of cattle and increase in number of non-descript and inefficient types. It is therefore necessary that the cattle breeding activity should be re-organised on sound basis and all those who can contribute towards improvement of cattle should be substantially assisted to take up a sound well-planned programme. Formation of breed societies, registration of cattle, breeding through selected bulls, castration of scrub bulls, adoption of latest scientific methods, organising shows, exhibitions and competitions are steps towards planned programme of cattle development.

Type Of Cattle Most Suitable

There has been considerable discussion in recent years on the type of cattle best suited to our agricultural economy. A large majority of experts and practical men are agreed that the best types are those of which the cows and bullocks are sufficiently productive; that is the cow is an efficient milch animal and the male a good work animal. The Royal Commission on Agriculture (1928, p-124) after careful consideration suggested ".....the type of cow likely to suit the average cultivator would be one capable of rearing a strong

derable increase in the cattle breeding activity and increasing cattle population; while during periods of depression, the demand for milk and bullocks considerably decline, resulting in considerable decrease in the cattle breeding activity, neglect of animals and consequent reduction in their population.

Many workers have shown concern at our large cattle population and their low production, and some have gone to the extent of suggesting encouragement of cattle slaughter as a solution, without appreciating the economic causes that have led to the present position. Williamson in his paper "Too many Cattle" (Developing Village India, I.C.A.R., 1946)while discussing these factors has rightly said:– "It is quite obvious that before he (cultivator) can replace the few more efficient animals for the many less efficient ones, the circumstances under which he lives must be altered.....as conditions are today there are certain advantages to be gained by a great number of cultivators in the maintenance of two small animals instead of one large one. In the struggle of a day-to-day life these advantages evidently out-weigh the disadvantages as the owner sees them....."

Some of these factors are: in absence of cooperation every cultivator has necessarily to maintain his own pair of bullocks. The number of pairs and size of bullocks are determined by the size of holding, the type of farming, the soil and climatic conditions – majority of the holdings being very small, these do not provide enough work for a pair of good bullocks nor can these holdings maintain the cultivators' family and a pair of heavy bullocks. Necessarily, therefore, such cultivators maintain a pair of mediocre bullocks except when additional carting work could be found. Then again in agricultural operations like puddling of rice fields or threshing of corn, a larger number of cattle are advantageous than a few strong one. These operations are done simultaneously by all cultivators in a tract and naturally each cultivator has to have his own animals or he might not catch up with the season and lose the harvest. There is then the question of losses through diseases and accidents. Greater number is to some extent a safeguard.

The question what should be our optimum cattle population, has come up for discussion on various occasions during recent months. Many a worker have held the view that we should strive to increase our cattle population as at present there is definitely shortage of both bullock power and milk. Others believe that the main cause of low productivity of our cattle has been too many numbers and that we should aim at reduction in cattle population and higher productive efficiency. While both appear to be correct as far as their arguments go, but it appears very clear that, under our present national out-look, any improvement in the cattle management practices and in their productive efficiency will necessarily lead to increase in their population. It is however necessary to stabilise our cattle population, so that the wastage existing in our cattle industry through neglect of the cow and female calves may be stopped and the number of cattle consistent with our requirements be maintained in a manner to obtain the best out of them.

THE U. P. ZAMINDARI ABOLITION BILL

By **R. L. Pancholi**

"HE who does not work, shall not eat either." The Zamindars have been sounded. They were responsible for illicit exactions from the cultivator in cash or in kind, "fines", rack-renting and evictions without any just reason. They were sinners in that respect and now they should accept their downfall in a sportsman's spirit, like the princely order, who swallowed the bitter pills gladly and saved their honour. The incentive and the impulse to produce more can come only when this incubus is eliminated and the farmers produce freely and happily.

Zamindari Abolition has become a "Fait accompli" now and the momentous Bill is before the public. It has been hailed by the Hon'ble Premier of U. P. as the "Magna Charta of peasantry and antidote to Communism". "This obsolete and out-of-date system", a century old "outworn feudal institution" will be liquidated to benefit the fifty million peasants of the U. P. Doubtless, the economic salvation of our people lies in the prosperity of the tillers of the soil.

But, after all the eulogies for the spirit and intention behind the Bill, one cannot shut his eyes to certain grave discrepancies in the Bill. We should not be made to think and feel alike, which meant that we should not think or feel at all. The Bill cannot be taken as the final production of any superb mind.

In our Province, more than 1 crore of the farmers have got lands less than 10 acres and 40 lakhs of them have not got even one acre to their credit. Therefore no land revenue should be charged from these farmers who carry on only an unprofitable and losing business.

A suggestion has come from some quarters that the land revenue of those having less than 1 acre of land should be reduced by 6 As. in a rupee; of those having lands from 1 to 4 acres, by 4 As. in a rupee and of those who have got 4 to 6 acres and 6-10 acres of land, by 2 As. and 1 Anna respectively in a rupee. Further, it has been said, that no land revenue should be assessed from the farmers who have less than 10 Acres of land for at least a minimum period of time till agriculture becomes a paying proposition to them. The bill has made no provision for any reduction of rent. On the other hand, the Premier holds the view that no further decrease in rental is possible since the Government has already brought it down from Rs. 19 crores to Rs. 17 crores. Still, we have to say, that the cudgel falls too heavily on the small farmers' back. There must be elasticity in rents taken by the Government. It is surprising that the Government have not accepted some fruitful recommendations of the Zamindari Abolition Committee, appointed by itself. However, we should not forget that the cultivator did not grumble, hitherto, in paying the land revenue. It was only the other part of their payments, e. g., nazrana etc. which squeezed out their blood. This major part of the revenue paid by them went to the landlord and only a smaller part of it to the Government. Now, this dread of unauthorised exaction being removed, I think, the cultivators will not object to pay the land-revenue to the Government. So, the status quo should be maintained for say 10 years, after which rents may be revised and reduced as necessary.

calf and of supplying in addition 1,000 to 1,500 lb: milk for house-hold use." Hon'ble Rajendra Prasad, late Food and Agriculture Minister in his inaugural address at the Sixth All India Cattle Show, Delhi, on the 10th February 1947 supported the view that "India.....is not in a position... to admit the luxury of maintaining separate types of animals for milk and for draught. Therefore dependence must continue to be placed on a dual-purposes kind of animals, the males of which are capable of meeting the agricultural and transport needs of the country while at the same time the female can be expected to yield reasonable quantities of milk..."

There is at present a lot of waste occuring in our cattle-breeding industry in the neglect of cow and female calves. Describing the treatment of cows the Royal Commission on Agriculture (1928, p-196) recorded ".....a point of view which should make special appeal to the people of this country, it is that of the welfare of the cow, than which there is no other animal more mismanaged." At another place the Commission (p-224) said 'There are many districts in which cows can with difficulty rear their calves." This is indeed true. The cow and its female progeny have been sadly neglected and in many cases allowed to die of starvation. The 1945 livestock census figures reveal that in the Indian Provinces against the male adult cattle population of 38.1 millions, the adult cow population is only 26. 2 millions.

It is thus clear that the cow should be made sufficiently productive to enable its better care and management. The Famine Enquiry Commission (1945, p-184) have even suggested the possibility of developing the cow "which could be used for drought purposes and yet yield a reasonable supply of milk." Actually, cows have been used as plough cattle in some parts of the country. The 1940 cattle Census figures show that 1. 3 million cows were being used as draught cattle. In Egypt it is reported that all milch animals are used for work that except for very high milk yielders, there has been no decrease in milk production or in the condition of the cows.

Preventing Loss through Cattle Wasting Diseases

There has been a great increase in the incidence of cattle wasting diseases during recent years resulting in increased mortality of cattle and decline in the productive efficiency of others that recover. A well-planned cattle breeding enterprise may become useless in face of frequent attacks of cattle disease. This has often led to closing of cattle breeding enterprises. The main cause of this has been the deterioration in cattle feed resources and poor feeding of cattle resulting in lack of vitality and thereby resistance to diseases. Besides the various cattle diseases resulting in their high mortality, there are a number of other ailments, which though not fatal, considerably lessen the productive efficiency of cattle.

It is necessary to avoid this great wastage by intensifying preventive measures and taking required curative measures and enforcing strict cleanliness.

Importance Of Organised Marketing

It is generally accepted that organised marketing systems lead to a development of the industry, and this is more so true for perishable products like milk and livestock. Under the existing marketing system, a major portion of the milk

produced in rural areas cannot be marketed for fluid consumption and has therefore necessarily to be converted into milk products mainly *ghee* before marketing, thus giving the producer a very much lower return than he could obtain if he could market it as fluid milk. According to the Report of Marketing of Milk (1940, Pp. 105-10) the producer receives only about 60 to 65 percent of the consumers' price for milk though very little is done to milk after it has left the producer. Regarding *ghee*, the producer receives only about 62 percent of the consumers' prices (Marketing of Ghee, 1948, Pp. 81-2). As for the marketing of cattle, the breeders' share in the price paid by the final buyer is said to vary between 50 to 86. 5 percent (Marketing of Cattle, 1944, p-44).

It is thus clear that the producer gets only about 60-65 precent of the consumers prices the remaining 35-40 percent goes as the share of the inter-mediaries for their comparatively very small services. The greatest drawback of the existing marketing system is the lack of a system of guaranteeing the quality of the products or the livestock and this has led to a lower return to the producer. Development in the marketing system and introduction of a system of certifying quality, will surely lead to remunerative prices for the producer and serve as an impetus to the development of the industry.

Lack Of Community Organisation

A well developed community life is essential to the social and economic development of a community. The community life in the village has been disturbed due to the progressive tendency on the part of the intelligentsia to go out to cities and towns. The result has been that a vacuum has been created and the lack of leadership has resulted in progressive dis-organisation of community. The former unity between community members no more exists and outside influence has disturbed it. A proper leadership can restore the unity and co-operative tendencies to the advantage of all the community members whereby they could help one another regarding finances, materials and could effectively oppose outside exploitation. But under the present state of dis-organised community life, the cultivator has necessarily to depend for every little help on outside agencies for which he lends himself to considerable exploitation.

Need for Stabilising Cattle Population

In a discussion on cattle development problems, the question of cattle population invariably receives a good deal of attention. Increase in the number of cattle is natural and desirable. Under optimum conditions if left unchecked, the cattle population can increase five-fold in a decade. However, the various limiting factors do not allow such increases to happen. These factors are: famines, floods and diseases, which take a heavy toll and reduce their breeding ability; cattle slaughter which reduces their numbers; insufficiency of cattle feeds, retarding their growth and propagation, and artificial checks on breeding from certain types of stock. The export trade in cattle is not yet developed though there is some scope for it.

The cattle population is thus governed by many factors-and the greatest of all is perhaps the economic one. During periods of prosperity increased demand for milk and bullocks, leads to a consi-

The tenants have been asked to make voluntary contributions of ten times their rent for acquiring Bhumidhar rights and getting their rents reduced by 50%. This measure has been adopted for providing finance for the 'speedy abolition of zamindari, checking inflation and utilising peasants' savings for productive purposes". The sub-tenants and the general body of tenants of Sir will be given fixity of Tenure for a period of 5 years and if they, then, wish to acquire Bhumidhar rights, they can do so by a payment of 15 times the hereditary rate or the rent of their tenant-in-chief. Here arises a debatable point. There are some, including Shri Ch. Charan Singh, who hold the view that peasants have earned enough money during the last ten years due to abnormally high prices of foodgrains, their rent remaining at the pre-war level. But facts should not be blurred by such self-made assertions. It is only those farmers, having more than 10 acres of land who are likely to have more or less shaken off their debts. Others, forming a majority of the cultivators, who have less than 10 acres of land are still semi-starved. Their cost of production rose up due to high prices but their holdings being uneconomic and fragmented, the produce did not increase. Sometimes it was even less due to the niggardliness and cruelties of nature. When they themselves could not procure two meals a day-square or unsquare how could have they piled up money by selling their produce. They have been adversely affected by high prices. They are still poor.

Shri Charan Singh says that the love for land will make them pay the requisite amount. Does he mean that the cultivator should fall back to the money-lender for removing the pain due to absence of ownership of land ? If not, how shall he express his love for land ?

The bill shall, in all likelihood be a harbinger of peace, prosperity and contentment. Still, a larger class comprised of agricultural labour, the rural unemployed and under-employed and 65% of peasantry, who are unable to get the barest minimum subsistence, will be left untouched by the measure. The method of cooperative farming does not inspire us with any hope due to the typical psychological make-up of the Indian cultivator's mind. He is conservative and uneducated. This process will be slow and halting, and may be-God forbid-conducive to agrarian discontent. With one voice, they say, that the farmer loves his land and with another, that he shall be made to leave his land by persuasion or by legislation ! " Hunger, poverty, nakedness and unemployment " shall still haunt the rural world ! How shall the Frankenstein of Communism be laid !

No solution has been found for the serious and major problem of landless labour. The "Creation of classes of tenants like Adivasis and Asamis does not touch even the fringe of the problem. " The wages of landless labourer have not increased, inspite of evergrowing high prices of foodgrains. The Premier says that the Bill contains proposals for providing waste lands to them and that the restriction on letting and sub-letting shall give land to such labourers. It is to be seen, how far it goes to ameliorate the conditions of the hard-fated labourers.

It is curious that the Bill does not specify anywhere that the compensation will be made in cash. " Clause 71 " says that the compensation will be made in the form and the manner as may be prescribed.

The Government, by this, do not commit themselves to payment in cash. And yet, it is told, on public platforms that the landlords will be paid in cash.

Some say that the zamindars have been paid more than they deserved. In fact, all shall be paid eight times the net asset and the rehabilitation grant is not being given to those who pay more than Rs. 5000/- as land revenue. The Government have done well here, in not accepting the recommendation of the Zamindari Abolition Committee.

It has been said, that no provision has been made for settling the large army of two lakhs " have-nots " who shall be rendered jobless after the abolition of zamindari and that, a portion of the 25 to 30 lakhs acres of land, that shall be released, should be given to them. Analysing carefully, shall this vast area of 25 to 30 lakh acres be released at all ? One can have any amount of land as Sir & khud kasht. So, the limitation of a maximum of 30 acres makes little sense. These figures of the would-be spare area cannot be relied upon. Further, how has the figure of 2 lakhs of jobless workers been arrived at ? Is their present occupation main source of income for them ? No survey has ever been taken of these things. The Premier has rightly and unequivocally said that redistribution of land, as demanded by the socialists, will lead to inordinate delay, as the land was not rubber. The demographic pressure, therefore, ought to be relieved by supplying supplementary occupations, cottage industries and initiating rural industrialization.

Recently, it has been reported, that 3,500,000 cultivators are faced with ejectment from land, which they had been cultivating for years, because they cannot establish legal title thereto. They are entered as holders of land without the consent of the zamindars or the tenants-in-chief in the paper of the Revenue department. The Bill makes no provision for them. It gives no security of tenure nor any protection to them. This is a practical problem. Shri Lal Bahadur Shastri, in one of his speeches, had to warn the mischief-mongers creating trouble on this very issue. Our suggestion is that the maximum limit of 30 acres should be applied at once and in all cases. The excess of land be taken away, whether it be khudkasht or not. Those having more than 30 acres of land do not consist of more than 1000. Only these people will stand to lose. The Zamindari Abolition Committee had been warned by the witness from the Allahabad University that the Government should complete land records first and should not hasten with the Bill. Cornwallis also had committed such mistake. He introduced the Permanent Settlement hastily and the zamindars then, forcibly took possession of wells, tanks, forests, etc. He did not take stock of these things first.

The Government have accepted 6¼ acres as minimum for an economic holding. This is only a guess-work. We should not be dogmatic about this serious problem. The question as to what an economic holding is, depends upon so many factors, such as number of family members, the fertility of soil etc. This limit ought to have been fixed after careful and proper survey. In fact, the cultivator ought to be given the optimum size of holdings for getting maximum produce at minimum cost. For the present, we might say that this measure (of a minimum of 6¼ acres) may be adhered to for administrative convenience. But, afterwards the govern-

ment should not adopt a lukewarm policy in this matter. On the other hand, it should be given prime consideration. There has been some confusion due to lack of clarity in definitions of some words. The ambiguity arises in the definition of the "Estate." It itself refers to a share in or of "an estate."

Then, the law governing the creation and devolution of rights should have been placed under the Bill.

The Bill, in itself is not quite sufficient for curing all the ills. Tenancy legislations are only palliatives, not cure. We can now hope against hope for the prosperity of the 'Daridranarayana.' It is only a beginning. A socio-economic revolution aimed at by our leaders may remain an unreal conception, if the Bill is left to itself. Practice should be the objective manifestation of professions, otherwise it shall be difficult to check the onrush of the communistic tide. The peasant has become conscious of all the mischiefs. Uptil now, the society has sinned against him. He was not sinning. He fasts, others feast. He covers all, himself shivers. He gives roof to others by remaining himself out of shelter. Here is the opportunity for him to have his legitimate and overdue position of honour in the society. He must be given fixity of tenure, fair rents and free transfers. On the other hand, peasants also should cooperate as cooperation is the keystone of the arch of peasant-proprietorship.

The Socialists' surgic knife is not needed. Let us win the race at tortoises' pace, slowly but steadily and then the soul of Bapu will get the peace for which he had laboured throughout his life.

FOREST STRIPS AND THE KANARA FARMER

By **H. T. Koppikar**

CLEARANCE of forest strips around cultivable land has become a common enough feature in the North Kanara District, during the past few years. A landholder with a fragmented bit of cultivated land to his credit asking for grant of adjacent strip of forest or people acquiring fallow lands and then asking for contiguous strips of forest, on the plea of ensuring safety of crops from wild animals have not been very uncommon. The width of such strips varies from 44 yards to even 440 yards (2 furlongs) according to, the extent and category of the cultivable land, the type and value of surrounding Forest growth, the topography of the area and the incidence of wild animals which adversely affect the crops. The purpose of granting Forest Strips for clearance has been to help the farmer in preserving his crop from the ravages of wild animals and to bind him to his holding, secondly, to facilitate cultivation of the land lying fallow due to the vicinity of large tracts of Forests and danger of wild animals to cattle and crop and, thirdly, to rehabilitate the landless and renovate the villages which were deserted in the past due to inclement climatic conditions, lack of medical aid and transport facilities and the diminishing interest of the cultivator in his vocation. All that has been required of the Strip grantee is that the strip granted to him by Government be cleared within two years and kept clear of all undergrowth for five years. To enable him to meet the cost of clearance and maintenance of the strip, he has been allowed to cut and sell tree-growth, the varieties of trees and extent of treegrowth to be retained uncut by him being dependent on the various factors briefly stated at the outset. He has also been given the concession of raising food and economic crops and growing fruit trees on this Government land, free of assessment. But to what extent was the 'strip-dar' availed of these concessions?

In most cases, the marketable tree-growth has been cut and sold but the 'strip-dar' has not been as meticulous in clearing the strip and maintaining it as required. The Government are constrained to notice that these concessions have been abused in not a few cases. The stips which are devoid of tree-growth (due to clearance) are now covered, more or less, with dense scruby growth which is growing denser every day, being no longer checked by over-topping tree-growth. The cleared strip instead of being helpful in ensuring the safety of crops from wild animals is thus likely to become an ideal shelter for them. Without proper clearance of the strip, neither raising of subsidiary crops on it is possible, nor preservation of crops on the adjacent tilled land is feasible. Let the wellmeaning 'strip-dar' realise that he has in fact put the potentialities of his land in jeopardy by not being scrupulous in clearing and maintaining his strip.

Moreover, has he not heard the clarion call of the National Government TO GROW MORE FOOD to help make his Mother-country self sufficient with regard to food? Or is it that he has not yet applied his mind, money and manual labour towards winning the present war on the Food Front? Will he fail his country when every bit of cultivable land is required to be put to useful purpose, when every effort counts, and when every home-grown grain, every article of food is welcome?

Let the 'strip-dar' who has been allowed to clear all growth from his strip complete the clearance work with least delay and burn the brushwood with due intimation to the Forest authorities. Where clearance of all growth is not permitted, let him find convenient open patches to heap debris and burn the same with due caution and with the knowledge of the Forest authorities. Let him sow subsidiary crops and vegetables on the "rabbed" strip and patches and not be slow to watch and to protect the bumper harvest.

A BRIEF SURVEY OF BEE-KEEPING WORK IN BOMBAY PROVINCE

By **H. Viswanathan**

PRIOR to 1938, a few scattered and individual attempts for the domestication of **Apis-indica** and of a few colonies of foreign Bees-Apis-mellifica were made in the Bombay Province. For one reason or the other those attempts did not

meet with success. In the year 1938, the Department of Agriculture took up the question and established a centre at Ganeshkhind Fruit Experiment Station, Kirkee, Poona, for systematic Bee-keeping, research and training in Bee-keeping. For about two and half years the centre continued to function and collected valuable data towards the establishment of a number of Bee centres in the Province and got a number of students trained in the subject. Later in 1939, a centre for the development of Bee-keeping was started in Honavar under the auspices of the All India Village Industries Association subsidized by the Government of Bombay which was later run by the Department of Agriculture till three years back when the Cooperative Department took over control of the centre as by the time a Bee-keepers' Co-operative Society was functioning at Honavar with good results. The centre had established over 2,000 Bee colonies in these years chiefly in the talukas of Honavar, Kumta and other talukas along the coast. The annual production of honey at this centre and other talukas in the District of N. Kanara ranged from 15,000 to 20,000 pounds. Thus the industry took root first in North Kanara and continued to show good progress throughout but, it did not spread to other districts where conditions favourable for Bee-keeping were available, except in Mahabaleshwar, where a private concern "Madhu Kosh" by name was started in 1939 and continued to flourish having about 400 Bee colonies on an average and producing 4,000 to 5,000 pounds of honey in the year. The concern still continues to do good work. Since three years there has been some good work put in the state of Kolhapur, which has now merged in the Province of Bombay, where about 200 to 300 Bee colonies have been established having an annual production of about 2,000 pounds of honey.

In the year 1946, the Government of Bombay set up the Village Industries Committee and since then the development of Bee-keeping in the Province has been entrusted to the Committee. In the first instance the Committee started work at two places—Mahabaleshwar in the District of Satara and Nandgad in the District of Belgaum—and later chose five districts, Dharwar, Belgaum, Ratnagiri, Satara and Surat, for extension of work and several centres have been opened. Work at Mahabaleshwar and Nandgad show good progress while at other places the progress is slow for lack of good trained workers and co-operation of the villagers. However attempts are being made to improve the situation. During these two, three years' work, the Committee could get over one thousand colonies of Bees established and owned by about 400 villagers belonging to some 100 villages or so and having a production of about 7,000 pounds between 1948-49. The Mahabaleshwar Centre alone with its sub-centres has produced about 5,500 pounds out of the total production while the rest came from Nandgad, Jamboti in Belgaum District, which was about 800 pounds and the balance from other districts. In Mahabaleshwar, about 400 colonies out of about 700 colonies have yielded honey, a few yielding a maximum of 60 pounds each during the whole season and in Nandgad and Jamboti out of 300 colonies 150 yielded, a few yielding a maximum of 30 pounds during the year. These results have been obtained with mostly raw and inexperienced hands. By way of Bee-keeping a few villagers have earned from

Rs. 100 to Rs. 400 in the course of one year as additional income. The Villagers are getting convinced about the importance of Bee-keeping as a subsidiary cottage industry.

At present, there are about 4,000 to 5,000 Bee colonies established in the Province of Bombay chiefly in the Districts of North Kanara, Belgaum, Satara, Kolhapur, Thana, Surat, Ratnagiri, Dharwar, etc., etc., producing an annual production of honey of about 25,000 to 30,000 pounds. There is immense scope for developing the industry in the Province and if fully developed several crores of rupees worth of honey could be produced every year as the best part of the most productive slopes of the Western Ghats and a long coastal strip lie in the province where bees and flowers abound. The areas of the Bee-belt has been calculated to reach something like 51,000 sq. miles offering room for over 30 to 40 lacs of Bee colonies which would in turn yield 3 to 4 crores pounds of honey every year if properly housed and cared for. Calculating at Rs. 1-8-0 per pound of honey, the total cost will come to $4\frac{1}{2}$ to 6 crores of rupees. Several commercial apiaries too can be established. Plans for extending the work in other districts of the Province, starting of Bee-breeding Farms, Training Centres etc. are under consideration of the Village Industries Committee and will be executed under the Post War Reconstruction Scheme. Probelms relating to Migratory Bee-keeping is also under study. Recently, in the month of June, 100 Bee colonies from Mahabaleshwar were shifted to Poona for the monsoon period as an experimental measure in the direction of migratory Bee-keeping and all the colonies reached Poona safely and stood very well the motor journey of about 85 miles and that the colonies have resumed their normal work very briskly in the different gardens in Poona where they have been placed. The Rainfall at Mahabaleshwar is between 300 and 400 inches during the three, four months and that of Poona is only between 30 and 40 inches and in these months the bees get both pollen and nectar in abundance at Poona and the bees could be kept busy and then taken back to Mahabaleshwar during the honey-flow for getting more honey. The latest report goes that the bees are doing well and are multiplying themselves in their new surroundings.

Lastly, it is welcoming news that the next All India Bee-keepers' Conference and Bee Exhibition will be held in the Province of Bombay, for the first time. It is being organised by the Nandgad Bee-keepers' Co-operative Society, Ltd., and is to be held at Gandhigram, Nandgad, (Dt. Belgaum) from 2nd December to 4th December 1949. This will have further stimulative effect for the growth of the industry which is indispensable for the success of the "Grow More Food" campaign, for more bees, the greater will be the yield of food crops from both cultivated and uncultivated lands.

FOOD PRODUCTION IN NORTH KANARA

By V. R. Hegde

IT is true that there is deficiency of food supply as far as our District is concerned. I propose to examine this question a little more in detail with the help of such published statistics as are available at present so far as our District is concerned. The factors one has to consider in discussing and bringing into relief this all important question are briefly detailed below:—

A. The population of North Kanara.
B. The total requirement of Food grain.
C. The total area under food crops.
D. The produce obtained from all these areas.
E. The probable losses out of this and other demands on this total production.
F. How far the net available food grains are sufficient for the existing population.
G. What are the methods to increase the supply of food.

A. Population

According to the Census figures of 1941, the total population of North Kanara is 4,41,157. Taking an increase of 8% during these eight years after the Census the increased population would be about 4,76,350.

B. Requirement of food grains

Assuming that a man and a woman above 15 years require about 18 ozs. each daily, and a boy or a girl about 15 ozs. of food (irrespective of the present ration rules) the total requirement of the annual consumption of food would run into 29,153 tons for below 15 years, and 52,303 tons for adults.

C. and D. Area under food grain crops and their yield

The figures of normal acreage under different crops as shown in the season and crop report of the Bombay Province is as under:—

Name of Crop	Acres	Yield in Tons
1. Rice	1,62,251	71,566 (Rice) including Waingan
2. Jowar	504	101
3. Ragi	1,408	461
Total	1,64,163	72,128
4. Tur	76	10
5. Gram	350	50
6. Mug etc.	6414	935
Total	6840	995
Grand Total	1,71,003	73,123

E. Other demands or losses

The probable losses of this grain are by utilizing the grain for feeding Milch cattle or otherwise wild pigs, birds, rat trouble, ultimately rain and storage pests contribute great amount of loss. It is rather difficult to estimate this loss, which altogether might amount to more than 25%. But I have calculated it as 25%.

The other source of loss of food grain is the utilization of part of produce for next year's sowing. Calculating 80 lbs. for paddy, 8 lbs. for Jowar, 40 lbs. for Gram, and 10 lbs. for Cereals and other pulses, the total demand of food grain would be about 5,835 tons. So the total loss of food grain would be:—

Pests.....25%.....	37,954	Tons
Seed.....	5,835	,,
Total	43,789	Tons

The net amount of food grainavailable is 73,123 Tons.

F. How far the available food grains are sufficient for the existing Population

Under B above, we have seen that the total requirement of food grains for the population is 81, 456 tons. From D and F we find that the net available food grains for food purposes come to 73,123 Tons. Thus there is a clear deficit of 8,333 tons of food grains every year. This means that there is a deficit of about 11.4% of the actual requirement.

1. *Supply of Improved seeds*:—A scheme for the multiplication and distribution of improved strains of paddy evolved on the Mugad Farm (suitable for the drilled tract of Kanara) has been sanctioned. The improved strains have been found to increase yields over seeds of local varieties. This Scheme aims at covering an area of 41,000 acres of paddy of Haliyal, Mundgod, Yellapur and Sirsi Taluka. These seeds are purchased from Registered Seed Growers by paying a premium over the control or market rates and sold to cultivators at cost price. Government bears all incidental charges.

2. *Compost Making Scheme*:—Kanara cultivators do prepare large quantities of compost or F. Y. M. as it is called. It is in fact the main source of manure for crops. With adoption of extended and intensive cultivation, need for the same is much more. Kanara has got the greatest facilities in having forest nearby where dry leaves and grass can be collected in unlimited quantities. Cultivators are under the impression that larger number of cattle are necessary to prepare compost. The new method does not require large quantities of Dung.

To encourage production of compost on an extensive scale Government gives a subsidy of Rs.3/-for each pit of 10'x6'x3'. One such pit will give 5 cart loads in 4 or 5 months.

To encourage villagers to take to this in mass Government has offered a reward of Rs. 25 1/4-to any village showing 125 such pits.

3. *Irrigation Scheme*:-*i*). Bhandhar Schemes:-Kanara abounds in large number of perennial nalas and springs. With a view to give stimulus to cultivators Government has sanctioned a Scheme under which Rs. 5/-are given as Subsidy to every acre of paddy grown from water impounded by the bhandhars and Rs. 3/- for every acre of pulses grown. 800 such bhandhars serving 5,000 acres are put up last year.

ii) Tanks and Wells:-Inspite of heavy rains paddy crops do suffer due to holding off, just when crops need it. As an insurance against such occasions, cultivators had large number of tanks, in suitable places. But due to neglect these have become unserviceable and thus affecting the crop. In order to review the service of these tanks, and to encourage construction of new ones, Government has sanctioned a scheme for repairs and new construction under which a subsidy of 25% of the total cost (but not exceeding Rs. 500/-) is given.

4. *Vegetable Extension Scheme*:-After Kharif paddy crop is harvested, large area of low lying lands having water within 5 to 10 feet are allowed to lie

fallow for nearly 8 months i. e. until next Kharif season. To encourage extension of the area under vegetable, a scheme under which seeds and seedlings worth Rs. 5/- and manure mixture worth Rs. 30/-are given as Subsidy for every acre of additional area brought under vegetables.

5. *Extension of areas under Sweet-Potatoes:* Low lying lands of the coast hold enough moisture to grow sweet-potato after paddy without irrigation. It can be grown on uplands during rains. Inspite of such facilities, the area under sweet-potato is only 900 acres. With a view to push it upto 2000 acres Government has offered a subsidy of Rs. 15/-for manure mixture.

6, *Crop Competition:*-Crops in India are known to produce very low yields, which is one of the reasons for shortage of supplies of various agricultural commodities. These low yields may be ascribed to inefficient cultivation, deficient manuring and inadequate water supply. Given all these facilities and with closer attention, it is not impossible to step up production per acre. In order to set up the agriculturists to think of higher production, a scheme of competition has been announced. These prizes are awarded to every taluka to the first three successive cultivators who would produce higher yields per acre of paddy. The result of this competition beginning from this year will surely open the eyes of cultivators about the capacity of the lands.

7. *Crop Protection:*-Since the area under forests predominates, the crops grown are subject to heavy loss on account of ravages by wild animals. Pigs and monkeys are the greatest enemies of crops. Tigers carry a heavy toll of cattle. In order to help the agriculturists in carrying on mass campaign, Government is encouraging formation of Gun-Clubs and to organise these clubs. Special Shikar staff comprising of one Shikar officer and six Assistants has been sanctioned. To encourage killing of these trouble some pests rewards are given as under:-

Wild pigs.....Rs. 2/-each.

Monkey.....Re. 1/- ,,

Tiger.....Rs. 25/- ,,

Government has further relaxed game rules to some extent and allowed hunting upto a distance of 3 miles from the limits of the village. Strip clearance allowed will afford further help in keeping back the wild animals from crops.

8. *Agricultural Education:*-In order to train up future generation of the agriculturists in the improvement methods of agriculture and to create taste for it, an Agricultural School has been now attached to the Farm. The course is for a period of 2 years and trains up young men in practical farming and allied subjects. A scholarship of Rs. 20/-per month is given to each student.

9. *Rural Development Boards:*-To enable the non-official to take active interest in matters relating Rural Development and to represent the difficulties to proper quarters District Rural Development Board has been reorganised with a non-official secretary.

RURAL INDIA

Vol. XII, No. 11] DECEMBER, 1949 [Whole No. 129

SECRETARIAT LIBRARY 1 DEC 1949

"Salvation of India lies in Cottages."

—*Mahatma Gandhi*

ALL INDIA PEOPLE'S FOOD COUNCIL

FOR quite a long time past enlightened public opinion has been feeling the necessity of an All India non-official Organisation for development and safeguarding the interests of Agriculture, the basic industry of the country. Food shortage and consequent drain on the country's wealth on foreign imports has brought the national economy on the verge of collapse and focussed the attention of the Government and the people to attain self-sufficiency in 'Food' on the basis of war emergency. Despite the appeals of cooperation issued by the Prime Minister and the Governor General from time to time public response including that of the agriculturists has been meagre and unsatisfactory. Inadequacy and inefficiency of the Government measures on the one hand and apathy and unresponsiveness of the people on the other have practically sealed the prospects of the 'Food Campaign'. The situation as it presents itself at the moment is most disconcerting and something needs be done immediately to organise and enlist the cooperation of the cultivators on whose active support the success of the 'Campaign' basically depends.

Government agency whether of foreign or indigenous brand is hardly competent to evoke enthusiastic response from the people for voluntary and self-sacrificing national service. An independent public body alone has a chance to inspire public confidence and carry patriotic appeal for mass action. An All India organisation representative of agricultural interests and essentially interested in their welfare can appeal to cultivators for active support of a national cause with a reasonable amount of success. Since 'Food' issue is a problem of life and death to our country no time would be more appropriate than the present one to set up a 'People's Food Council' and make it an instrument for 'Food' self-sufficiency at this most critical period of our country's history.

The immensity of the task of setting up an organisation for effective guidance of 75 per cent of the country's population, mostly illiterate, living in more than half a million scattered villages and hamlets is truly herculean, though its utility and urgency is supreme and unquestioned. The illiterate and ignorant agricultural population, quite unlike other sections of the society, has the disadvantage of leadership coming up from their own class. However sympathetic and well meaning other people may be, they could hardly provide effective leadership to a class to which they do not

naturally belong and to whose sufferings, and disadvantages they could not lay claim for personal experience. The agriculturist population, due to ignorance and poverty, is again at a disadvantage of producing a cadre of social workers from amongst their own class and provide adequate funds to run a big organisation. Social workers drawn from urban areas find it difficult to settle down in villages and identify themselves completely with the life of the villagers.

The number of people interested in problems of food and agriculture and the development of village life is just a drop in the ocean. Those who have made service of the villages their career for life may be counted on one's finger tips. And the class of people who would be willing to open their purse-strings to finance an organisation for the development of agriculture hardly exists. The Government, due to financial stringency, have already stopped their development grants to the Provinces and suspended many of their schemes of irrigation and similar other projects. That is none too encouraging a background for setting up a countrywide organisation under consideration. But this could only be deferred or delayed at the cost of further deterioration in the food situation and finally the breakdown of national economy.

The fact remains that 'Food' self-sufficiency has to be attained within the next two years and this is only possible through willing and intelligent cooperation of the cultivator. Not only for the solution of the present 'Food' crisis, but also for the solution of every other problem hereafter willing and active cooperation of the agriculturist masses would be absolute and essential and could only be ignored at our peril. Whatever the difficulties in the way must be overcome and a beginning in the right direction must be made.

It should not be difficult to get together a dozen or more right type of non-official workers and sympathisers interested in the cause of 'Food Production' and agricultural development from all over the country and frame a workable constitution for the organisation contemplated herein. This Constitution may be sent to the press and to other public workers interested in the cause for inviting helpful suggestions. The first foundation members of the 'Food Council' may function for a year to give proper shape and start to the organisation when they may be replaced by the elected members. Immediately the Constitution is finalised and adopted, measures may be taken to organise Provincial, District and Taluka branches of the Council.

Since, Food has been admitted to be a non-party issue, the People's Food Council should function on strictly non-political lines drawing its members from all parties and classes of people. Non-political and non-party character of the organisation must be maintained if it must carry universal appeal to the people. And, in order to lay the best tradition the 'Food Council' must be representative of all parties and classes of people in the country. But none, who is not interested in the welfare and advancement of the agricultural community should be admitted to its membership. Any extraneous consideration would be against the spirit of the organisation and must be ruled out.

An organisation of this nature has to adopt methods of constructive approach to the solution of its manifold problems

and abjure the present political methods of agitation, non-cooperation, strikes and deadlocks to achieve its ends. It should maintain the attitude of helpfulness and cooperation with the Government and the people and keep balance between the two. In support of a just cause it should stand by the 'Truth' and must not be afraid to speak or do the right thing for fear or favour of any party, the Government or the people. Gandhiji had the same idea in view, when in his last will and testament he had advised the Nation to disband the Congress organisation and start another body named 'Lok Sevak Sangha' in its place, which advice was not availed of by the leaders of the Congress for reasons of political expediency.

The Food Council should aim at and work consistently for the attainment of certain well-defined objectives. Increasing 10% output in food production is at best a short-term policy and would not satisfy the demands of long-term national economy. India being an agricultural country, its economic structure will have to be built up on the produce of the soil and the neglected cattle wealth. There is immense scope for the development of these natural resources and on their maximum output depends the industrial future of the country. Those who advise building up Indian Economic Structure on the basis of industrialisation forget the natural and geographical factors governing the country's resources. For a long time to come India's economic future depends on maximising our production from the fields and the cattle resources. Since our production from these sources is hardly one half and one third of what is being obtained in other countries, the objective of the 'Council' should be to make the country 100% surplus in 'Food' production over and above the requirements of self-sufficiency of its population. With increasing facilities and resources the Council would be well advised to extend the scope of its activities in spheres of marketing and transportation, which are helpful adjuncts to agricultural efficiency.

Obviously, the Central objective governing the activities of the Council should be to provide the best medium between the Government and the agriculturists for mutually helpful cooperation, enlightened guidance and effective execution of plans and projects concerning food and agricultural development of the country. Through selfless and disinterested service to the villages, it should acquire weight and influence both with the Government and the people and contribute to the economic development of the country. Consistent with its aim of a non-party and non-political organisation, it should scrupulously eschew all power politics and party-alliances and confine itself to humanitarian service and betterment of the lot of the producing masses of the country.

The foregoing consideration leads to certain conclusions which to the best of our knowledge should form the basis of this organisation. The issues in brief are:-

(1) There is a necessity of starting a non-official organisation on an all-India basis for the development of agriculture in general and for solving the immediate problem of food shortage in the Country.

(2) This should be a non-political and non-party organisation drawing its membership from all parties and classes of people.

(3) It should have creative and constructive approach to the solution of Food and Agricultural problems. Destructive and agitative methods would be alien to the spirit of the organisation.

(4) Through helpful service and educative guidance it should aim at providing a satisfactory medium between the Government and the people to promote joint and cooperative effort.

(5) Consistent with its aims and objects it should represent the people's and the agriculturists' point of view before the Government.

(6) It would aim at and work steadily for increasing 100 % surplus food production in the country over and above the dietetic requirements of its population.

(7) Besides educative and advisory functions, the Council and its branches would adopt practical methods to solve food and agricultural problems of the country.

We would welcome constructive and helpful suggestions from our friends and readers to improve the constitutional aspect of the organisation. All such suggestions may please be addressed to the Editor of this Magazine.

NOTES

INDIA'S NEW CONSTITUTION AND AFTER

Amidst scenes of jubilation, the Indian Constituent Assembly passed the Constitution for the Republic of India on the 26th November, after three years of tremendous labour of the Nation's best brains. The Constituent Assembly is to be congratulated on framing a Constitution, which, in future, will govern the fate of three hundred and twenty million people living in this country. It will be inaugurated on the 26th January 1950. Adult franchise, adoption of Hindi as state language and joint electorates are the three important features, which the new constitution adopts for future working of Indian Republican Democracy.

Much, however, depends upon the way the Constitution will be worked out, which again depends upon the quality of the people and the spirit in which it is to be worked. The working of Constitution is a solemn responsibility to be shouldered by the elected representatives of the people and it will ultimately be judged as to how they make use of Political Democracy to attain the twin ends of Social and Economic Democracy in the Country. Both the President of the Constituent Assembly and the Chairman of the Drafting Committee, Dr. Rajendra Prasad and Dr. Ambedkar respectively, expressed grave concern on this score and pointed out the difficulties and dangers inherent in this new enterprise in the course of their addresses to the Assembly. Dr. Rajendra Prasad pointed out the necessity of finding out men of the highest character, vision and ability to run the administration, who alone would be able to give the benefits of the Constitution to the betterment of the common man. He observed:—

"Whatever the Constitution might or might not provide, the welfare of the country would depend upon the way in which the country was administered.

"India needs today nothing more than a set of honest men who will have the interest of the country before them. There is a fissiparous tendency arising out of various elements in our life. We have communal differences, caste differences, language differences, provincial differences and so forth. It requires men of strong character, men of vision, men who will not sacrifice the interests of the country at large for the sake of smaller groups and areas and who will rise over the prejudices which are born of these differences. I have no doubt that the masses will throw them up. Let not those who served in the past rest on their oars, saying that they have done their part and now has come the time for them to enjoy the fruits of their labours."

It is all very well to hope for the best and expect a large army of men to come forward to give the country the best possible administration envisaged by the framers of the Constitution. But there is nothing in the Constitution which will transform men to act and behave differently from what they have been doing in the discharge of their obligations since the attainment of 'Freedom'. If freedom and the responsibilities that it has brought has produced men of character and calibre to run the administration efficiently, more of the same may be expected in the working out of the Constitution. But if there has been an exhibition of absence of character, integrity and efficiency leading to the present confusion and frustration in the country, the passing of the Constitution may not be expected to work out the miracle hoped for. And, all possible precautions need be taken to meet the risks and dangers inherent in this great enterprise. We must not be too generous to put high premium on the quality of the human material we have to deal with.

Dr. Ambedkar has presented a more realistic analysis of the situation and warned the country to guard against the grave eventualities when he said:—

"On January 26, 1950, India will be an independent country. What would happen to her independence? Will she maintain her independence or will she lose it again? What perturbs me greatly is the fact that not only India has once before lost her independence, but she lost it by the infidelity and treachery of some of her own people.

"Will the story repeat itself? It is this thought which fills me with anxiety. This anxiety is deepened by the realization of the fact that in addition to our old enemies in the form of castes and creeds we are going to have many Political creeds. Will Indians place the country above their creed or will they place creed above the country? I do not know. But this much is certain that if the parties place creed above country, our independence will be put in jeopardy a second time and probably be lost for ever. This eventuality we must all resolutely guard against. We must be determined to defend our independence with the last drop of our blood."

Immense harm has already been done to the country by the various political parties by placing their creeds above the country. If this tendency persists, the danger to the freedom of the country is very real. All that we submit is that the parties should rise above their political creeds and learn to place the country and its interests supreme in all their considerations. That alone is the common bond and a force for unity which will preserve national solidarity and make the working of the Constitution possible and productive of the best results.

PROSPECTS OF FOOD SELF-SUFFICIENCY PLAN

In one of his recent interviews given by Shri R. K. Patil, the Food Commissioner of the Government of India, he is reported to have expressed the hope of achieving self-sufficiency in food by March 1952. He seemed to be satisfied with the progress made by the various Provincial and State administrations in the implementation of the 'Food' plan. In the words of Mr. Patil, "A new spirit

and a new interest were definitely visible and certainly, there is much more effort put in and some achievement", indicates that the 'Food' plan is making satisfactory progress and the food targets may be achieved within the next two years.

Nothing would be more reassuring than the statement of the Food Commissioner based on his study tour of the Provinces and States. However, where he fails to carry conviction to the intelligent public is that he does not explain the grounds on which his hopes of attaining self-sufficiency are built up. May we remind him of the recommendations of Lord Boyed Orr and ask him to explain to the satisfaction of the enquiring public, whether the 'Food Drive' has been launched on the basis of War emergency; whether there is perfect coordination and cooperation between the Centre, the Provinces and the States and whether efficient link or machinery has been established between the planning authorities and the farmers to the satisfactory execution of the plan?

We hold, it is difficult to answer these querries in the affirmative. Our own study and observation of the situation does not warrant us to share Mr. Patil's optimism, however well founded it may be. Rather than war like basis on which 'Food' programme ought to have been taken up by the Provinces and the States, we fail to notice even normal functioning of the Government machinery. Day in and day out, we hear Government spokesmen including the Food Commissioner himself complaining of lack of response and enthusiasm on the part of the people and the cultivators. There is hardly any coordination and cooperation noticeable between the Centre and the Provinces and between the various departments of the same administration. Efficient functioning of the machinery at the village end is the toughest part of the job and we doubt, if Mr. Patil is too sure on that score. If this reading is correct, we submit that the optimism entertained by the Food Commissioner is hardly based on facts. All that he might have observed by way of more interest and application of more effort during his tour may be no more than superfluous energy and misdirected effort, which, rather than producing definite results, produce confusion.

The present working of development plans in the country including those of 'Food Production' does not give one an impression of producing sure and definite results. The Prime Minister himself has given expression to this view while delivering the Convocation address at the Engineering University at Roorkee. He is reported to have observed:—

> "There was a great deal of talk in India about development schemes, and projects. Everybody cried about the need for industrialising the country, but the picture seemed to him to be entirely confused. There was no attempt at unified thinking and no coordination of thought.
>
> "Resources of skilled man-power and finances in the country were limited, and India could not afford to waste them. Though they held some kind of Conference or other in Delhi almost every week, he had come to the conclusion that a method of co-ordination as between the Centre and the Provinces and between each department of the Government had not been evolved so far.
>
> "Some of our provinces behave as if they were almost independent countries. They did not think of developing India as one co-ordinate whole. The result obviously was that plans for institutions and industries overlapped one another, with the result that national labour and energy were wasted."

The picture presented by the Prime Minister does not leave much room for optimism on the 'Food front' as well. The Country, however, would expect the Food Commissioner to justify his optimism by actual achievements by attaining the food targets fixed for the year 1949-50.

POSSIBILITIES OF HYBRID MAIZE IN BIHAR

By **S. K. Mukherjee**

THE recent development of hybrid maize is a unique example of the influence of theoretical scientific research in genetics in revolutionising the production practice of an agricultural crop. Farmers all over the world are very conservative to adopt anything new in farming, but the spectacular superiority of good adapted hybrids over the ordinary maize in productiveness, lodging and disease resistance, have made the farmers in U. S. A. to switch over to hybrids completely in less than 5 years of their commercial introduction. To quote a concrete example we can take the case of the State of Iowa in U. S. A. For fifty years till 1936 the average yield of the State for maize used to hover round 1500 lbs. of kernels per acre. Now with the hybrids covering the whole State the average yield for the past few years have reached 3000 lbs. per acre. Their effect on the national economy of U. S. A. as a result of increase in maize production can be aptly put in the words of a U. S. Scientist as follows: "It is no exaggeration to say, speaking in terms of the overall national economy, that the dividend on our research investment in hybrid maize (corn) during the War years alone, was enough to pay the money cost of the development of the atomic bomb."

The simplest way to convey an idea about a hybrid maize is to compare it to a mule. A mule is the progeny out of mating of a mare with a jack ass and usually inherits the better qualities of both the parents. A hybrid similarly is a cross between two chosen strains of maize. The resulting cross is a very efficient plant. They are relatively uniform for good characters, hence usually more productive than ordinary maize. But like the mule the cross has to be effected every year. Seed produced from a hybrid crop is not as productive as the parents, unlike the seeds of improved varieties of cereals like wheat.

To appreciate hybrid maize production more fully it is necessary to understand how the maize plant reproduces in nature. Each kernel in a maize cob results from the fertilisation of an egg by a sperm as in animals. The egg is at the base of each of the silk where later the cobs with kernels form and the sperm is in the pollen shed from the tassel at the top of the same plant. Thus maize is a hermaphrodite plant but the flowers of two sexes are borne in two different parts of the same plant. Hence if either of the reproductive parts, the silks or tassel, are removed the maize plant can be made a male or female plant. Maize is wind pollinated and the pollen being light is carried easily from one plant to another resulting in natural cross pollination. Each kernel in a cob might be fertilized by pollen (sperm) from different plants. Hence in usual course it is difficult to select a promising plant that will breed true because they are hybrids according to the popular concept of a hybrid.

In hybrid maize this term is used in a specialised sense. It has been found that when strains of maize are self fertilized, i. e., pollen from the same plant is made to fertilize the female plant, for a few generations the plants become progressively smaller, poorer yielding and weak. But each of these lines become purer with every generation in their assortment of hereditary characters and when two such promising inbred lines not closely related are crossed, the resulting hybrid is usually larger and higher yielding, than the original strains. This is called expression of "hybrid

vigour'' which accounts for the success of so much publicised hybrid maize. Hybrids also offer unusual opportunities for breeding special types for special uses like green feed or silage etc.

Maize is one of the most important *Bhadoi* crop in Bihar totalling about 17 lakh acres estimated to yield 5 lakh tons. There are two broad divisions according to the time of maturity among the types grown in the province.

The earlier ripening varieties are suited to areas which are liable to inundation, later in the rainy season. The other type is the late maturing varieties grown on relatively higher lands free from floods. By introducing suitable maize hybrids the total production of maize of the province can be pushed up about 50 per cent without any increase in acreage. These hybrids can show their best performance only when they are grown under edaphic and climatic conditions to which they are adapted. Where soil fertility or supply of moisture are limiting factors they cannot be expected to excel very much over the local varieties.

An orthodox hybrid maize breeding programme to isolate suitable types for Bihar will take 8–10 years. A quicker method will be to import hybrid seeds from similar climatic regions in U. S. A. and test them here at least for 2 years in different parts of the province to find out the hybrids which can adapt to our conditions. Once the right ones have been isolated, multiplication of the seed on large scale by importing these inbred parents is not very difficult.

The peculiarity of hybrid maize which restricts the use of seed harvested from hybrid crop, indicates the possibility of success of commercial hybrid seed production as a business venture. A farmer growing hybrid maize has to come back every year to the seed firm to buy his seed. Moreover one maize plant produces very large number of kernels and comparatively very small quantity is equired to sow an acre. Hence farmers will be quite willing to pay good price for hybrid seeds of proven merit. In these days of cheap money and high prices for agricultural produce it is worthwhile for enterprising agriculturists with money to invest to take up this venture. Americans have done immense research work on this crop. Their research knowledge can be put to full use with a band of trained plant breeders as American seed companies have done with million dollar investment. Elaborate laboratories are not needed to start the work. Adequate land and minimum facilities to carry on agronomic trials will suffice. Government have launched some projects for this work recently. But private enterprise with more money at their disposal and profit motive may produce quicker results.

It is obvious the methods used by the maize breeder in his experiments to control pollination to find out suitable inbreds will not be suited to large scale commercial seed production. Isolation and detasseling are the commercial substitutes for the bags used by the breeder. The two inbred lines to be crossed to produce the hybrid are grown in lines providing one male line per four female lines, in isolated blocks. The sexes of the plants are fixed by removing either the male or female part just before they emerge which can be done even by child labour. Crossing them is effected by the wind. In commercial seed production this is again repeated next year with two such single cross lines to produce what is called ''double cross'' seed which involves 4 inbred strains. Though hybrid vigour is lowered a little but seed production is maximum and uniform and does not affect productivity of the resultant crop very much.

Introduction of Hybrid Maize in Bihar is expected not only to increase materially the total maize production of this Province and help in reducing our food deficit but also to develop certified seed production on commercial lines and open up a new avenue of employment for our trained farmers.

NEW PROBLEMS OF ADULT EDUCATION

By **Dr. K. N. Kini**

IN a country like India where over eighty five per cent of the people are illiterate, it is natural that Adult Education should in the first instance be mostly confined to the task of enabling the vast illiterate masses to read and write, including of course the imparting of an elementary knowledge of hygiene and sanitation, local geography and history and the very rudiments of arithmetic. Add to this, the adults once rendered literate should be enabled to retain their literacy by reading simple books on topics of interest to them and also journals dealing with our daily political and social and economic problems.

Vocationalize Adult Education

But our country has to progress industrially and in agricultnre and in producing first rate materials required for defence purposes. We should be, as far as possible, a self-sufficient nation. To produce these requirements our workers should be more skilled, evince greater intelligence and possess an elementary knowledge of science and practical mathematics and machine drawing. For example an ordinary labourer can hardly perform efficiently the tasks involved in the manufacture of electrical machinery and radio equipment, battle-ships, destroyers and so on. Therefore after the ordinary literacy of the adult is achieved, we should organize courses for them in elements of science and mathematics, geometrical and machine drawing and relate these to the vocations they are following with the object of enhancing their vocational competency. An analysis of each of the jobs in which the adults of the locality are engaged should be done and the particular aspects of the above named subjects that are applicable therein should be taught to them. If the adults find that what is taught to them has relation to their vocations and will enhance their efficiency and therefore their earning power, they will surely be interested in the instruction imported. In short we should vocationalise adult education even from the lowest level. Specially qualified persons should be employed to do the job analysis and produce suitable books for the use of the adults. Adult Education Teachers should also be specially trained to perform their tasks with zeal and efficiency and knowledge. They should keep themselves in intimate touch with industry and know their requirements.

In order to increase production in our country, which is the most important question of the day, we should organize as part of adult education programme *"trade preparatory courses"* for those already engaged in industry. An adult has chosen, say, metal-turning as his occupation. He finds that there is no future for it in the locality and that he would take to a new vocation, say, plumbing. Opportunities should be provided for such new trade preparatory courses, at the artisan level, in the evening or night classes.

Courses of *"trade-extension"* type should also be organized. An adult may not be very proficient say in "electric welding'' and he wishes to up-grade himself in the same vocation so as to enable him to earn more or occupy higher posi-

ECONOMICS OF HAND—LOOM WEAVING INDUSTRY IN THE UNITED PROVINCES

By **Ved Prakash Sharma**

HANDLOOM weaving industry is still one of the most important Cottage Industries of the province. Mostly it is followed as a main source of livelihood but quite a large number follow it as a subsidiary industry as well.

For centuries together India had been famous for her production of cloth. The very 'calico' owes its origin to the port of Calicut, which played an important role in the hoary past. India lost her export trade in manufactured cotton goods to Europe in the prime of the 19 th Century, the hand-spinning of cotton had practically ceased.[1] The products of the present Indian mills have monopolised the intermediate grade between the imported and handmade products. Thus on the one hand, superior type of mill products enter into competition with imported goods and on the other, inferior types wage a war against hand-products.

The A. I. S. A. and A. I. V. I. A. strove hard for the revivification of this decaying industry, under the blessings of Bapuji. Swadeshi movement also culminated into a comparative increase of khadi production. The consumption of the yarn by the hand-loom weavers of the country increased from 255 million lbs. in 1924-25 to 344 million pounds in 1934-35. The increase thus comes to 35%. (In 1925-26 Indian mills accounted for 43. 5%, handlooms 22.3% and imports 34.2% of the total of mill, handloom and imported goods)[2].

There are about 2½ million handlooms in the country and the number of dependents on the industry is approximately 10 millions. Annual production of cotton goods by handlooms is about 2000 million yards.[3]

In the United Provinces handloom weaving is carried on by Julahas, Pursutias and Kamalias, who number 2.5 lakhs. 74.2% are wholetime weavers and the rest are part time weavers, who are engaged in the work from 3 to 5 months during a year and in period of inactivity may augment their earnings by subsidiary occupations. The total number connected with the industry is 7.5 lakhs, including children and women helpers.[4]

The Industry still survives inspite of competition with mill-made goods. A survey of the weaving industry was carried in 1935. It releases the following information relating to U. P. -

Number of Weavers including helpers	7,77,185
Number of Looms	2,61,517
Value of goods manufactured annually Rs.	10,00,00,000.

The following table gives the number of weavers employed in weaving the three kinds of cloth in the province.

1. The Economic development of India: Vera Anstey, p. 207.
2. Ibid, p. 265.
3. Indian Year Book, 1944-45, P. 717.
4. The United Provinces Co-operative Journal, July, 1945, p. 22.

Fabrics	No. of regular weavers	No. of subsidiary weavers	Total No. of weavers	Total No. of Helpers	Graud Total
Cotton	109921	54896	164817	339181	503998
Wool	22181	6160	28341	68284	96625
Silk	49471	2083	51554	103108	154662
Total	181573	63139	244712	510573	755285

The following is the number of looms working in U. P. under the three kinds of cloth.

Type	Throw shuttle In existence	Throw shuttle Working	Fly shuttle In existence	Fly shuttle Working
Cotton & Art Silk	117012	80326	49901	37224
Silk ...	50118	48484	1636	1139
Woollen Blankets & Carpets ...	47727	40896	123	86
Total :	214857	169706	46660	38449

Total looms in existence	261517	
Total looms working	208155	
Total Annual Outturn (Yardage) Price		
Cotton including art silk		
Indian mill yarn	230861881	
Handspun yarn	24264457	
Imported yarn	42776384	
Total	297902722	36780282
Woollen Carpets	3787067	9463926
Silks	16019240	92660581
Total Yardage	317709029	

The following is the quantity of yarn consumed by handloom weavers in the United Provinces:-

Cotton Yardage		
Indian mill spun 43051071	51211530	
Handspun 6506997		
Imports 1653462		
Art Silk ...		3674896
Pure Silk ...		1040719
Woollen ...		12045404
Total ...		67972549

When the Congress came into power in U. P. in 1937, a great stimulus was given to the industry. The cooperative department of the province also contributed snfficiently to develop the industry. The U. P. Cooperative Indnsrial Federation is thinking of establishing weaver's societies in 24 districts of the United Provinces, in order to reorganise the cottage textile industry. The Federation has given orders for 1000 power looms and 500 handlooms for this object.

The agriculturists also take up spinning and weaving for utilising their spare time. Most of the spinners are landless labourers. They usually remain without any employment for a period varying from 4 to 6 months per annum. They are petty earners and their income hardly comes to Rs. 15/- to Rs. 20/- per mensem.

The acreage under cotton in the province is decreasing on account of Grow

tions in the industrial employment ladder. Courses should be devised for him to reach the highest proficiency. He should be taught the science, the mathematics, the drawing and the commerce connected with the trade, which knowledge will add to his cultural equipment also. Culture should and could be also sought through the vocation.

Up-grading in General Education

Another type of adult education greatly merits our consideration. A number of persons who have passed their examinations at various levels wish to enhance their qualifications. For example, an adult who has passed the sixth class examination wishes to study the subjects of higher classes and obtain higher certificates to enable him to upgrade himself in his profession. He is employed and cannot attend day school. He and other people like him should be afforded facilities to progress. Classes either in the mornings or in the nights should be organized for such persons and their qualifications enhanced. Indirectly, professions and vocations will get higher qualified persons.

Rural Universities in Adult Education

In all our programmes, especially of *higher adult* education, we should not lose sight of the rural population. Evening courses both literary and vocational are being gradually organized in the urban areas, but not in rural parts. This is partly so because we have not got higher institutions of learning in villages. We talk of food production but do not impart suitable instruction to the village folk in the art of modern agriculture and allied occupations, principally because there are no educational institutions there which can undertake the task. It is quite likely that, more and more middle and high schools will be established there. But it is highly improbable that the nation will think of higher institutions at the college and university level in rural areas.

I plead that we should establish new types of colleges and Universities in rural parts to suit the social and economic life of the rural population. Rural Colleges and Universities should be pre-eminently institutions for teaching people to produce food, clothing, and building materials required by the nation on modern scientific and technological lines. Agriculture, animal husbandry, textiles, forestry, pottery, fishery, rural electrification, rural building trades, soil conservation, small scale industries etc., should be the subjects of study *at college level in their natural setting* and the rural population should have opportunities of going up to the highest stages including research in these branches.

Laboratories for study of forest products and of problems on fisheries, agriculture and animal husbandry are being set up in cities, where there is no proper environment for these occupations. When an alien people, who were not earnest about these matters were occupying the highest posts, these laboratories were constructed in cities so that they may all reside in the urban areas and enjoy club life with their compeers in other departments. They had nothing in common with our rural population. They did not really mean to solve their problems either. But when we Indians are at the helm of affairs, we should take correct view of the whole situation and see that what is due to the rural people is vouchsafed to them. I therefore strongly urge that colleges and Universities be established in the rural areas and all rural subjects be studied in their natural environment much to the advantage and benefit of the rural population who have after all to produce the food that we need and who can produce many other articles for us provided we afford them suitable opportunities to do so. If we do not effect this reform, the more intelligent rural people will flock to the towns to add to the numbers of the unemployed or underemployed people and cause economic waste and dissatisfaction in the land.

If rural colleges and universities would be established with the above objectives, adequate and suitable arrangements can be made for upgrading the cultural as well as vocational levels of the rural population in their own environment and at times suited to their hours of work. During slack seasons, the farmers could have day courses and in the agricultural seasons, they could have night classes. "Trade preparatory" and "Trade extension" courses can be easily organized in these institutions of higher learning at any desired level. Of course, these institutions for rural folk should not be run on the cast-iron principles of urban colleges and universities with their interminable rules and regulations, ordinances and schedules which confuse even intelligent urban population. In rural universities, examinations should be all internal, more or less on the type of the *old Gurukulas where the pupils were not allowed to leave until they attained cent per cent competency.* The relations between the adults and the teachers would be more intimate and there will be no attempts by the candidates for examinations to steal question papers and for examiners to tamper with the marks. The performance of the pupils will be measured by their day to day performance and their studies will be continued until they satisfy the teachers that they are adequately competent.

Need For A New Philosophy of Life

In order to resolve the poverty, illiteracy, and ignorance in the land, we should develop a new philosophy of life and propagate it in classes for adults. The old slogan "Simple living and High thinking" has lead to poverty and ignorance. We should adopt a new slogan "*High Living and High Thinking*" which are not incompatible with each other. On the other hand high living goes well with high thinking in this materialistic world.

Production should be speeded up and the co-operation of adults is most needed in this matter. "Slow and Steady" does not win the race. Instead "Quick & Sure" wins the race of life, and our people should adopt this principle in their occupations.

The colossal illiteracy in the land cannot be removed by the older method of "hasten slowly". A big programme should be adopted and worked most briskly. "Hasten Hastily" alone will serve the nation in this matter. At our present rate, it will take, decades, if not centuries, to make India fully literate.

Defence should be a great concern of our nation. "Home guards" should be organized on a tremendous scale in towns as well as villages. Adult Education movement and Home guards movement should be co-ordinated. Adults should be interested in the matter of protecting themselves and their goods. *Every adult should be a soldier.*

More Food Campaign and other factors. The following table[5] gives the acreage under cotton in the province for the last five years:-

Year	Total area under cotton in acres	Irrigated area under cotton in acres
1942-43	311486	155585
1943-44	372361	166398
1944-45	202237	93857
1945-46	195329	89654
1946-47	168170	64149

(As it was very difficult to get information about other places in the Province, the district of Kanpur was selected as an example for studying the economics of the industry. The following information relates to the survey done in the district during 1945-47.).

The weavers use mostly mill yarn. Yarn of the following counts is used.

Count No	Price	Weight
22	11/6/-	3¾ seers
16	3/6/-	Per seer
6&8	6/8/-	3¾ seers
20	10/5/-	,,
10	7/14/-	,,

Process and Technique

Cotton is generally sown in the month of May. The crop gets ready by October. The seed rate varies from 7 to 8 seers per acre.

The following is a detailed description of the processes involved in the industry.

The first step in handloom weaving is collection and preparation of cotton. Women and children pick the cotton pods from the fields. These are then left in the sunshine and the husks are separated. Cleaning of cotton is done by removing the seed from the cotton fibre. It is either cleaned by hand or by a 'Rainhet'. 'Rainhet' is a small hand-machine and consists of two rollers either of wood or iron. They revolve towards each other when a motion is given by hand. The cotton is put between the space and a motion is given by hand. It produces from 3 to 4 seers of cotton lint per day, in case one man or a woman is employed in the work.

Then comes carding. After ginning the cotton, it is taken to the Dhunia, who makes the fibres to swell in soft staples, which can readily be spun. Carding is done by 'Dhunetti'. It is like a bow with wire string. Cotton is put under the bow, which is hung from the ceiling of the house. The string is striked by a mallet. The string thus gets vibrated and it separates the fibres. Charges of dhunias are 6 annas per seer of cotton on an average.

Then comes 'charkha' on the scene Wicks are prepared from cotton and spun into thread by means of 'charakha.' Dhanus Takli and the Yarwada chakra are two improved types of Spinning machines, but in villages the same old charakha, prepared by village carpenter is still to be seen.

It is regretful to note here that the use of mill-made yarn by the weavers has crushed to a greater extent the spinning industry of the country.

The thread or the mill-made yarn is arranged in groups and rolled round. They are then placed across the longitudinal threads. The whole is then stretched. An iron instrument, with some thread, is passed from one end to another through the threads. This completes weaving.

The weaver is helped a good deal by his wife. His wife and boys help him in arranging warp. One will find a division of labour in this industry and that is why it still survives.

Hours of Work in the Industry

The weavers sit early in the morning at their loom. They generally work from 7 to 10 in the morning and from 12 to 5 in the evening i. e. they work 8 hours a day. Women and children also contribute their bit to the industry which comes to about 2 hours daily.

Estimated Earnings

The weaver charges Re. 1/- as weaving charges for one seer of cotton, in case it is supplied by another man. Five yards of garah is prepared out of one seer of cotton. In weaving a than of 12 yards, 2½ seers of handspun cotton is required. Yarn is usually supplied to the weavers on 10 days' credit. Interest is charged at 10 annas per cent per month after the end of this time limit.

The daily outturn of a weaver is estimated to be about 9 yards a day, in case he uses mill-spun yarn, while 12 to 13 yards a day, in case he weaves handspun cotton. The following is the cost of production of weaving a than of 12 yards.

Yarn Count No. 6–2 seers	Rs. 7/-
Cost of sizing	Rs. 0-6-0
Cost of warping	Rs. 0-4-0
	Rs. 7/10/-
This would sell for	Rs. 10/-
PROFIT	Rs. 2/6/-

They are able to weave a than in two days and thus are able to earn Re. 1/3/- daily.

Weavers are able to clear off their stock on the market days. They are able to have a fair margin of profit and thus are enabled to eke out a fair living. This is all due to the scarcity of cloth at present.

Recently the condition of the weavers has deteriorated. For supply of yarn, the weavers have to apply for a permit and a lot of expenditure is incurred, while coming to the city of Kanpur for purchasing yarn. Besides this they have to observe many other formalities. The result is that most of the weavers are without any work. On account of inadequate supply of yarn most of them have taken to wood cutting on contract basis.

State Aid & Handloom Weaving Industry[6]

In 1934 the Central Government allotted a sum of Rs. 5 lakhs per year for 5 years for developing cotton handloom weaving industry. U. P. got Rs. 1,04,000 for 17 months, ending March 1936. For 1937 the provision was Rs. 86,400. The Provincial Industries Department with the help of this grant chalked a scheme for giving state aid to weavers. The main postulates of the scheme were:-

1. Survey of the Industry
2. State Aid
3. Sole Buying Agency

1. *Survey*-15 surveyors were appointed for 8 months in 1935 for the purpose. Samples of various types of handloom cloth were also collected.

5. Season and crop reports of the United Provinces

6. Report on Economic Planning in U. P., pp. 126-128.

2. *State Aid*–The scheme aimed at an all round help to the weavers.

(a) *Samples*–Samples were collected of various factories. Selected samples were put in sample cards with their prices.

(b) *Commercial Travellers*–8 rural and 4 urban commercial travellers were appointed for popularising the sample. They also indicated the trend of consumers' demands.

(c) *Designs*–Designers were appointed for both weaving and printing.

(d) *Research and Experiments*–Appliances and processes were not uptodate, hence arrangement was made for (a) special staff including a research assistant (b) two master weavers and others to work at Dyeing and Printing School of Kanpur.

(e) *Finishing and Calendaring*–Provision was made for grants to those who set up calendaring & bleaching plants in 3 or 4 different centres of the Province.

(f) *Supervision of Production*–It was proposed to engage the services of demonstration parties of the model weaving schools. The report of the Industries Reorganisation Committee recommended that these parties be instituted by tuitional classes.

(g) *Provincial Marketing Organisation*–A Central Marketing Organisation was set up for marketing the handloom products. It worked under the supervision of the business manager of the Provincial emporium.

(h) *Sole Buying Agency*–Sole buying agents were appointed for purchasing products, manufactured by cooperative societies of cottage weavers numbering about 30.

The following is the item-wise expenditure involved in the scheme:–

	Requirements during 1934-36 Rs.
1. Survey	17719
2. (a) Collection of samples	3000
(b) Commercial travellers	7590
3. Designs	7280
4. Researches and Experiments	4500
5. Finishing	40000
6. Stores & Supervision of Manufacture	16588
7. Provincial marketing Organisation	7247
8. Sole buying Agents	200
	Rs. 104124 or Rs. 104000

The Problem and Its Solution

At present the prices of the mill cloth are soaring high. The roughest mill-made cloth for kurta, kameez etc. is selling at about rupee one per yard while the handwoven cloth of the same quality is available at not more than twelve annas per yard. Handspun cloth can thus very favourably compete with mill made cloth. It can also bring enough remuneration for the artisans. The fact is this that the artisan of the village does not take initiative and pains to improve his lot. Petty traders advance yarn and money etc. to the artisans and give them wages on the work basis. The businessmen are able to earn more than the workers because these people know about markets and the tastes of the consumers. The call of the hour is to train the artisans.

Demonstrations in the whole process along with better appliances and tool should be given by means of exhibitions and shows. Technical education should be given by a few educated to the artisans. The tools for improved production of articles should be made available to them.

There are two chief difficulties in the expansion of this industry, admitted by Shri Rajagopalachari, namely[7] (1) prevalent taste for fine fabrics and (ii) more cost of handspun cloth in comparison with mill cloth. He recommends that state should give a bounty in order to help production and reduce prices as far as possible. Other methods, i. e., state aid, loans and facilities for distribution and production and decrease in freight are also proposed by him.

Government can also help the spinning industry according to the suggestions put forward by the Special Officer, appointed for studying Cottage Industries of Madras Presidency[8] (i) Invention of an improved type of charkha (ii) Improvement in hand-ginning machine and carding bow (iii) arrangement for supplying good cotton to the spinners at main centres (iv) standardisation of counts and hanks (v) Supply of charkha and other tools on hire purchase system, and (vi) Government should buy khadi as far as possible for her requirements of cloth.

Certain types of production should be reserved for hand-spinning and handloom industries and cess may be levied on the mill cloth till some remunerative subsidiary vocations are found for the peasants.

7. Indian Economics by Jathar & Beri, p. 266.
8. The Economics of Indian Agriculture by Dr. B. V. Narayana Swami, Vol. II., p. 446.

WORLD POPULATION AND WORLD FOOD SUPPLIES

By **Sir John Russel**

IT is currently accepted that the world's population is increasing more rapidly than its power of producing food. The coloured peoples and those of Eastern Europe increase much more rapidly than those in the West. Among the Western nations, it is usually the lower income groups that multiply most quickly. The anticipated result is a progressive deterioration in quality of the populations but an increase in quantity. This part of the forecast must be left to population experts. Only the second part, that the world food production resources are nearing their limit, is dealt with here.

It is, of course, a fact that land capable of or actually producing food is lost to cultivation every year; also that no large areas of land suitable for settlement by Europeans are now available. Nevertheless, there is still land that could be used, and much of the existing cultivation could be intensified.

Accurate figures are not known, but the world's population is about 2,000 million, and the annual increase about

2½ million. The area of land having climate suitable for crop production is about 11,500 million acres—about five acres per head of world population. This, however, includes great tracts of almost impossible soils, while the area actually producing food is of the order of 2,000 or 3,000 million acres—about seven per cent. of the total land surface.

The tillage figure is indefinite because of the wide latitude given to the term "grazing land". But accepting the data as they stand, the average allocation of cultivated land per head for the world is at present about 1 or 1½ acres per head. In Europe, about 1·5 to 1·8 acres suffice per head of population, and in the vegetarian countries of the East about half this area, or less.

Unequal Incidence

It is estimated that some two-thirds of the world's population are food producers, most of them peasants, and all experience shows that the food producer is the last to go hungry when trouble comes. The food problem is, therefore, of unequal incidence; it presses hardest on the crowded lands, where a large part of the population is either non-agricultural or, if on the land, redundant. The three chief regions are north-west Europe, including Great Britain and Italy, India, and East Asia, including Japan and part of China. Elsewhere the possibilities of food production are still adequate even though they may not be fully used.

The chief food imports of north-west Europe and Italy before the war were cereals and oil seeds, but we needed meat and dairy products also. On the average, continental Europe, before the war, imported from outside its borders 11.1 million tons of grains per year, including 3.7 million tons of bread grains. But we imported no less than 9.75 million tons of grains, of which 5.6 millions were bread grains.

The war upset the very efficient arrangements by which this commerce was carried on, and new ones have been set up. The grain areas of the great wheat-growing countries of Europe, France, Italy and Spain are, or were until recently, still below their pre-war acreage, as also were those of Germany, Hungary, and Rumania. The countries of north-west Europe can no longer rely on supplies from Eastern Europe. They must look to America and Australia, and now compete with us. Can these countries increase their supplies to satisfy the new demands?

Wheat Acreage

The reports of the Food and Agriculture Organisation indicate that the world acreage of wheat, which in most countries had fallen to a minimum in 1943, had by 1946 attained its pre-war value of something over 365 million acres; but in the meantime, of course, the world population had increased. Argentine and Australia are not yet up to their pre-war areas. Canada has a little more, and the United States still more than pre-war.

This failure to increase the world area of wheat since the 1934-38 period has been interpreted as showing that all the wheat lands of the world are occupied. But there was a similar standstill between 1909 and 1924, when the world acreage remained steady at about 280 millions; thereafter it rose steadily until 1937, when it reached 365 millions. The block

is probably due to limitations of transport and storage facilities, and until a market seems assured, i. e., until the food is needed, no one is prepared to incur the considerable cost of providing more. For the same reason there has been a similar stagnation in areas under barley, oats and maize.

Sir William Crookes, in his Presidential address to the British Association in 1898, declared that the wheat areas of the world were almost fully exploited and after the 1930's the world would begin to suffer hunger unless yields were increased. With true scientific insight, he indicated the way out: the synthetic production of nitrogen fertilizers. This was duly accomplished and has led to a great increase in food production and saved us from hunger during the two wars and after.

Plant Breeders' Success

But the wheat lands were not exhausted, and indeed they have expanded greatly since his time. Canada, in 1898, had 4·million acres of wheat; in 1940 it had 28 million: and its present acreage is 24 million. Australia in 1898 had under 5 million, but in 1947 had 14 million acres. This quite unexpected expansion arose from the success of the plant breeders in producing new varieties of wheat better able than the old ones to grow in regions of low rainfall; in consequence, the wheat zone was pushed more and more into the dry regions, and also into the northern regions of shorter summers.

At first the plant breeders' work was purely empirical and, while much success was achieved, there were difficulties which could not be overcome, especially in regard to rust. The development of modern genetics has greatly strengthened the plant breeders' powers of attacking problems, and after years of research the Minnesota workers, under Professor Stackman, and the Canadian Rust Research workers have now produced varieties more resistant to rust than any before.

It is quite impossible to forecast how far this wheat breeding work can go, but modern science can hardly fail to produce still more drought and disease-resistant varieties suitable for still drier regions, and varieties that can be pushed further northwards. Crossing with *agropyron* (couch grass) is claimed by Tsitsin to do all this, and the claims are being studied in Canada.

Soil Conservation

A great difficulty about expansion into the dry regions is the liability to soil erosion; soil drifting where the rainfall is less than 12 inches per annum, gully erosion when it is more. Undeniably, much land has been lost in this way; in many cases, however, not beyond hope of recovery. Methods of prevention and cure are known, and the Food and Agriculture Organisation reports that the importance of soil conservation is being increasingly realised, though progress is not infrequently retarded by shortage of staff and materials.

In the U. S. A. and in most parts of the British Commonwealth considerable action has been taken; to a greater or less extent 49 countries are doing something. The "conservation districts" of the United States, where proper preventive measures are adopted, have increased from 36 million acres in 1938 to 1,112 million acres in 1948, and by nearly two million acres in Puerto Rico. Active conservation

plans are in operation on nearly 158 million acres, and the "treated area" is 83 million acres.

Dr. Bennet, Chief of the Soil Conservation Service, in his report for 1948 writes: "By sharply increasing our present conservation operations on the land we can overcome and cotrol erosion within 20 or 30 years." Even in the United States, however, conservation has not yet overtaken deterioration; still less has it done so in other countries. In any case it is a slower process, and action therefore has to be on an adequate scale.

Value of Grass

One of the most important agents in conservation and rehabilitation is grass, which is just as valuable in the dry regions of the world as in the wet. As with wheat when it was pushed into the dry regions, so with grass; the first step is to find suitable varieties, then by selection and breeding to improve them. Since these dry regions are used more for grazing than for cropping, it is necessary to find grasses or leguminous plants suitable not only for soil conservation but also for grazing, though, of course, soil conservation comes first. Active research on this subject is in progress in the U. S. A., Canada, Australia, New Zealand, South Africa, and elsewhere.

The Soil Conservation Service of the U. S. A. recently surveyed four Western States and found only five per cent. was in good condition; on some 70 to 80 per cent. of the range, forage production could be doubled with proper conservation practices. Similar results could be widely found elsewhere.

The Australian work on range improvement has been summarised recently by Dr. Trumble in his book *Blades of Grass*; but the excellent work of Dr. Pole Evans in South Africa is not as well known as it deserves to be. He has searched the dry regions of Africa for drought-resistant grasses and found a number that are good both for grazing and soil conservation. His collection is planted near Pretoria, and it is greatly to be hoped that the necessary breeding and selection work can be carried out. Proper management of the grazing is, of course, essential.

Problems of Tropics

The tropics contain large areas of land capable of producing much more food than at present, but they present special and often very difficult problems, not only technical, but human as well.

In the wet Tropics, plantation crops—tea, rubber, palm oil, etc.—grown under British or Western European supervision have given considerable knowledge of the scientific and technical problems involved, and shown the need for treating the region as a whole, i. e., putting the permanent crops on the high ground which is subject to leaching and erosion, and the annual crops, such as swamp rice, on the low ground. The proposed UNESCO survey of the forestal regions of the Amazon valley, if carried out, should show how this vast region could ultimately be utilised.

The African savannah regions of seasonal rainfall are already being developed for oil seeds and other tropical crops, and this work has been helped greatly by the modern insecticides which enable noxious insects, tsetse fly and others, to be controlled. The disc plough and modern large implements have made large-scale operations possible, and though difficulties still remain, they are

likely to be more on the human than on the technical side.

At the other end of the climatic scale much progress has been made in this country in utilizing high-lying land that had long been almost waste (though much of it was used in the 19th century), and in Sweden, Finland and Russia in extending the region of cultivation northwards and getting higher output from the podsols. It seems unlikely that all these efforts to expand the present small area of the worlds' cultivated land will fail.

Need for Intensified Cultivation

There is, however, greater scope for increased food production by intensifying cultivation of existing land. More than half the world's food producers are working on very primitive methods and obtaining very poor yields. The old medieval grain-fallow system, discarded here in the 18th century, is still widely practised in the peasant countries, with other systems equally inefficient. We doubled our yields when a proper rotation was substituted and livestock husbandry fused with arable husbandry, and further, the way was opened up for greater intensification.

Considerable increases could undoubtedly be obtained by similar methods in the peasant countries. There are, of course, difficulties, both technical and political; they include the provision of a proper system of land tenure, of education, of buildings, roads, water and farming appliances; particularly some measure of industrialisation to take redundant people off the land and set them to produce the appliances the farmer needs.

Before the war Czechoslovakia and Poland had both gone well on the way to do this. In India the experimental farms regularly obtain at least double the neighbouring peasants' yields. Even in our own country the most progressive farmers obtain well above the average outputs of comparable land. Once a suitable system is devised and responsive varieties of crops and stock found, the biggest advances can be expected from a fuller and better use of fertilisers. Their consumption is greatly increasing, but only a few countries as yet make adequate use of them.

Farm Losses

Finally, there are still great losses of crops and animals on the farm, and of produce between the farm and the consumer's table. Various estimates have been made of the losses involved, some little more than intelligent guesses, but others, such as the short life of a milking cow in the herd, are based on ascertained facts. The total is impressive. Fortunately great efforts are now being made to reduce these losses, and the recent addition of biochemistry to the list of sciences aiding agriculture, which has already given us selective weed-killers, tomato-setting hormones, oestrogens, anti-biotics, etc., promises still further achievements.

There is no room for complacency, but certainly none for despair; and with intelligence and hard work the food problem for our generation can be solved. All the same the shrill sensationalism of some of the pessimistic writers will serve a useful purpose if it arouses a widespread determination to keep our own meagre allowance of agricultural land as nearly intact as possible.

(From "Agriculture", the Journal of the British Ministry of Agriculture).

ALTERNATE FOODS

By Sir. S. V. Ramamurty

THE Indian Union produces about 19 million tons of rice, 6 million tons of wheat and 13 million tons of millets a year. For a population of 300 millions, of whom 80 per cent. are counted as adults, this gives a little less than one sixth of a ton a year or one lb. a day per adult.

In 1946, the available supplies were reduced by cyclone and drought and the daily ration was reduced to 12 oz. a day. Since then, with continuing bad seasons and a fall in procurement besides the loss of the cereal-growing areas of Pakistan, the ration has been reduced to 10 oz. a day, and even this is being maintained by an import of two to four million tons of cereals a year. To meet this situation, an intensive drive has been started this year on a war footing to increase the cereal production with a view to doing away with the imports of cereals by the end of 1951.

Supplementary Foods

As a supplementary line of activity, the Subsidiary Foods Production Committee has been appointed in the Food Ministry of the Government of India. The object of this Committee is to investigate how far and in what manner the production and consumption of subsidiary foods may be stimulated so that the country's dependence on cereals may be reduced. Tapioca, Sweet Potatoes and Bananas are the main foods expected to increase the supply of carbo-hydrates and proteins.

The present production of sweet potatoes is purely for use as vegetable and of bananas as fresh fruit. Tapioca is used not only as a fresh vegetable but also industrially. Groundnut is used as food in the shape of nuts and for export. The production of sweet potatoes is limited by consumption in the areas round the centres of production.

The subsidiary foods are already produced in South India sufficiently to meet the need to supplement cereals, but they are not produced on a scale where they can constitute alternate foods to cereals. In North and West India, there is scope for increased production of sweet potatoes and tapioca as well as bananas as subsidiaries to cereals.

In the targets of increased food production, credit is not taken for subsidiary food production meeting a part of the cereal deficit. The reluctance of Governments, both Central and Provincial, to take count of subsidiary foods in their food drive and the reluctance of the Madras Government to stimulate further consumption of subsidiary foods are significant.

With a ration of 10 oz. of cereals yielding 1,000 calories, we may add 250 calories for subsidiary foods, giving a total calory value of 1,250 per day. This is on acceptable nutritional standards a dangerously low level.

Balanced Diet

The Subsidiary Food Committee needs, therefore, to think of tubers and groundnut not as subsidiary foods but as the basis for alternative foods, if they are to provide an addition to the ration.

Hence it has been accepted by the Committee that sweet potato or tapioca and groundnut should be supplied in such a ratio that a food balanced in carbohydrates and proteins is thereby made available. Experiments are in progress in South India to find the keeping quality of sweet potato and tapioca chips and flour. The economics of production and distribution are also under examination. In Bombay, investigation is being made as to the best way in which groundnut cake flour may be made an addition to tuber powder or even to cereals.

Both as regards tapioca and groundnut, the scope of extensive cultivation lies mainly in South India. Such extension is, however, not economically possible unless the Government agree beforehand to purchase the produce at a stated price.

Synthetic Cereals

It is the view held in South India that mixtures of tubers and groundnut cake flour should be made into grains so as to stimulate rice which is eaten mainly in the shape of grains. Nutritional experts have recognised that food in the shape of grains has a better chance of digestion than as paste, as the digestive juices play round the grains more easily than on paste. The South Indian instinct for grains as food is thus scientifically valid. On the formation of synthetic cereals, experiments are being made in South India at my instance. I should state that my colleagues in the Subsidiary Foods Committee from North and West India are not interested in making grains from tuber and cake flour mixtures though they have agreed to my making such experiments.

Tapioca, Sweet Potato and Groundnuts

The principal foods of India are rice, wheat and millets. These cereals form 80 per cent of the food of the Indian people, the remaning 20 percent. being made up of subsidiary foods such as vegetables, fruits, pulses, milk and fish. Few have, and indeed can afford to have, meat as their primary food.

The cereal foods of India are in short supply to the extent on the whole of about 10 per cent. The population is growing and, unless production increases *Pari Passu*, the deficit of cereals will further increase. At the present rates of increase of cereals and population, the likelihood is that the increase in population will outrun the increase in cereals. There is need therefore to look for foods alternate to cereals.

Rice eaters have this year a deficit of about 4 per cent. supplied from imports into the country. This deficit is on the basis of an 8 oz. ration a day. It is clear that if rice eaters are to get a minimum reasonable ration of 1 lb. a day such as was in force even a few years ago, the deficit is much larger. Rice eaters to get more food have to take to wheat and millets among other cereals. Wheat eaters, too, through a deficit of wheat production in the country, have to take to millets among cereals, if imports are stopped.

Millets

There is, however, no surplus production of millets, including maize in this country. The population which cannot be fed on millets feed on rice and wheat. In 1946, when India could not get all the wheat and rice she asked for through allocation by the International Emergency Food Council, the Indian Food Delegation to the U. S. A., of which I was a member,

asked for an import of maize from the U. S. A. That year, we were told that the U. S. A. had a crop of 70 million tonsof maize. We asked for a million tons of maize to be spared for India. We were told that our request made in February, 1946 came too late because cattle in America which are the main consumers of maize had begun to be fatted in October, 1945, and they could not be deprived of their normal food of maize, when half fatted. It was also said that transport facilities in the U. S. A. were not adequate to move both wheat and maize to the ports for export. However, we got some maize from the U. S. A. and also from Argentina. But it was found difficult to pass this maize into consumption in India. The rice eaters did not take to maize easily and it was in the rice eating area that distress was then most severe. Again, even wheat did not pass easily into consumption by rice eaters as wheat in the shape of flour was psychologically not acceptable to persons eating food in the shape of grains.

Food needs to be not only physiologically but also phychologically acceptable. This is a fact which was readily recognised by live business men abroad, with the result that in the U. K. Indians could eat "mock rice" in place of rice and Indians in Ceylon and Malaya could eat "rice wheat" and 'ryeena'. Mock rice, I am told, is made from wheat flour and soyabean flour. The flour is made into vermicelli, which is cut into lengths of rice grain. When cooked, the small bits remained separate as rice grains do on cooking. The taste naturally was that of wheat and not rice. The Government of India got "rice wheat" made in America in 1946 but condemned it as of no greater value than wheat, forgetting that the supply of grains would have been psychologically more acceptable to South India than supply in the shape of flour.

The use of "ryeena" in Ceylon was spread with the help of propaganda leaflets, one of which I have obtained from the Indian High Commissioner in Ceylon. Here is the method of "ryeena rice" preparation advocated in the leaflet:-

"Roast ryeena in a chatty to a light brown colour. Break up roasted grains either on grinding-stone or with a pestle and mortar. Winnow of sieve the broken grains, separating the coarse bits for rice and wash this once or twice to remove dust and stickiness. Put it into a pot of boiling water (proportion 1 of "ryeena" to 1½ of water) adding salt to taste. Cook exactly as you would cook ordinary rice."

Synthetic Rice

In September, 1949, a message of *P. T. I. Reuter* from Australia appeared in *The Hindu* as follows:-

"To give effect to proposals for the production of synthetic rice, the Western Australian Government had agreed to purchase a power alcohol distillery, the States Minister for Industrial development, (Mr. A. F. Watts), said recently. Mr. Watts added that, if present proposals reached fruition, 79,000 tons of wheat per annum would be processed and 51,000 tons synthetic rice, 2,400 tons of ordinary brand and 15,000 tons of high quality cooked bran would be produced."

I have asked for a sample of this synthetic rice and a note on its method of preparation to be sent to me from Australia. I coined the term "Synthetic rice", so far as I know for the first time, early in 1949. Perhaps, a live business instinct in Australia has adopted the term to appeal to Indian rice eaters.

Maize Rice

In India, Dr. V. Subrahmanyan, of the Central Food Technological Research Institute, Mysore, has developed a method of making maize acceptable to rice eaters. He has called it "Synthetic rice". By comparison with rice made from wheat, it may be called maize-rice. It is made like mock rice from wheat. Maize paste is freed from fibre and raised to 60deg. C. so as to gelatinize the starch. Vermicelli is then made and cut into lengths of rice grains. I have tasted maize rice along with ordinary rice. I found both taste and texture to be good like rice. I have, however, suggested to Dr. Subrahmanyan to use tapioca or sweet potato as the basic material for starch instead of maize, as there is no surplus maize produced in the country or now being imported. I await the result of his work to see if tapioca starch can be raised to a suitable temperature and yield grain-like lengths of vermicelli, which remain separate when cooked as in the case of maize-wheat.

Under the Subsidiary Food Production Committee, Dr. Krishnan, Food Expert, is making experiments in producing synthetic cereals with 70 per cent. tapioca or sweet potato, 20 per cent. of groundnut cake flour and 10 per cent. of rice or wheat. These grains, when boiled, do not remain separate but yield a sticky mass like ordinary sago. I have recently received a sample prepared by Messrs. Stanes and Co., Trichur. These grains were boiled with ordinary rice in the ratio of 1 to 5. When cooked, they remained separate. The saving of rice is, however, only 1/6 of the total food. It is expected that with cleanser groundnut cake flour the proportion of synthetic cereal which can be added to rice so as to produce grains on cooking may increase.

Sago From Tapioca

In Salem there are some 40 factories making sago from tapioca for a long time. Sago has been imported from Malaya made from tapioca. The notion that sago is made from sago palm has long been a myth. The sago palm has only lent its name and fame to the imported sago. During the war, the import from Malaya stopped and enterprising business men from Salem learnt the process in Malaya and started its manufacture in Salem. These manufacturers have now agreed to make sago from tapioca, mixed with some 20 per cent. of groundnut cake flour and a little rice or wheat. The Central Food Institute, Mysore, proposes to apply to the manufacture of such sago the method adopted in making maize-rice, in order to get sago grains which remain separate when cooked.

If synthetic cereals with tapioca or sweet potato and groundnut cake flour can be made so as to yield separate grains on cooking, then we shall have a method of providing alternate food which is physically grown in plenty and psychologically accepted by rice eaters.

Search For Tubers

What we have been trying to do in the shape of providing an alternate food containing the balance of carbohydrate and protein which cereals yield, Nature has also been trying to do. I suspected that Nature which produces tubers with a large amount of starch and groundnut with a large amount of protein would have attempted to grow underground crops with appreciable amounts both of starch and protein. Recently I have been informed that a tuber from East Africa with 10 per cent. protein in place of 1 per cent. or so in tapioca and sweet potato has been imported for experimental purposes by the

Tapioca Research institute at Trivandrum. The Imperial Council of Agricultural Research is sending next year botanical experts to South America to search for new strains of cotton. I have requested that the party may also search for fresh types of tubers which have a balance of carbohydrate and protein comparable to that of cereals.

The Tapioca Research Institute at Trivandrum has evolved by cross-breeding a type yielding 40 tons of tapioca per acre, i. e., about 13 tons of dry stuff compared with 1/3 to 1/2 of a ton of cereals per acre. The University of Lousiana has evolved a variety of sweet potato yielding 14 tons per acre. The present yield of tapioca and sweet potato in India is only 5 to 6 tons per acre with normal methods of cultivation, which gives about 1 1/2 tons of dry stuff. Even this is considerably higher than the quantity of food which an acre of cereals yields. There is thus a possibility of enormously increasing food production in India, if we can make alternate foods through tapioca and sweet potato cultivation, combined with groundnut production.

Cereals are food. But food is not cereals. Alternate foods to cereals are needed both to meet present-day deficits and to assure future surpluses in food.

—*Sunday News of India*

HOW TO INCREASE FOOD PRODUCTION

By D. Krishna Iyengar

THE total production of food crops in India is not enough to feed the people with a well-balanced and nutritive diet. India's average annual production is as follows:—

	Million Tons
Cereals	60.0
Pulses	7.5
Fats and Oils	1.9
Fruits	6.0
Vegetables	9.0
Sugar	1.07

Investigation has revealed that only 59 per cent of the total population of India is adequately nourished, 41 per cent poorly so, and the remaining 20 per cent very badly fed. About 40 per cent of the villages in India has excessive population, consequently leading to very poor nourishment, high death rate and thus lessen the span of life. The average size of the holding has diminished from 14.2 acres in 1901 to 7.3 acres in 1927 and it has been further reduced to about less than four acres in 1947. This is one of the greatest handicaps for increase of food production.

The Food Grains Policy Committee appointed by the Government of India observes that the measures which were taken were doubtless in the right direction, but the objectives were too diversified, the efforts were inadequate and in most areas the necessary vigour and drive were lacking. If definite results are to be achieved in food production in the future, a radical revision of the approach is necessary and a new production policy and machinery has to be devised. Even the agricultural development in different parts of the country has not been commensurate with the potential resources of the respective parts, though there was considerable scope for increasing production.

The Grow More Food Campaign was mostly planned on the basis of generalities and the removal of handicap in different parts was not taken into consideration. Besides the farmers, who were the most important factor in the scheme remained mostly indifferent and their enthusiasm and keenness remained as cold as ever since the farming was a gamble with rain. So much so, the entire period of Grow More Food Campaign has been entirely neglected. Moreover exploitation of the ryots did not stop; prices were not favourable to him; Programmes chalked out were not convenient to him and he was never consulted, and above all he remained a gambler in his profession.

Agricultural Resources

The important resources that are necessary for increasing food production are: land, labour, livestock, farm-equipment, seed and manure, irrigation, transport and agricultural credit.

Land: Regarding land nowhere a systematic survey is undertaken to find out, how much of the cultivable waste is capable of being cultivated and how much can be reclaimed and made cultivable. Many parts of the country has suffered from deforestation on a very large scale, consequently leading to soil erosion. Owing to the formation of ravines in certain localities, a large increase in food production has not been practicable. Similar other problems pertaining to land have not been successfully tackled.

Labour: The operations of agriculture such as ploughing, sowing, weeding, reaping, and harvesting are carried on by human labour. Even the services such as putting up embankments, digging of wells, irrigation etc. are carried by manual labour. Much of this labour is provided by the peasant and his family. Sometimes casual labour is also employed. Investigations show that the farm work gives employment for about 200 days in the year and during the remaining period, most of the population in rural parts is either unemployed or underemployed. There is no organisation among them to provide facilities of employment. The general standard of living of them is very low, and they also suffer from lack of educational, medical sanitary and housing facilities.

Live Stock: India has a large livestock population, of over 200 million cattle, 100.5 million sheep, and 190.7 million poultry. India's cattle is nearly one-third of the world figure. Cattle are reared here not only for milk and meat but also for the plough and the cart. Sheep breeding has become important for its wool and meat and the poultry farming provides eggs and birds. Livestock industry also offers other bye-products such as hides and skins, bones and manure.

The Royal Commission on Agriculture has rightly observed that "having regard to the very quality of the grazing available and to the fact that it fails to afford adequate maintenance for cattle at the season of the year when fodder grown on cultivated land is scarcest, we are of opinion that this number of cattle is a heavy stock for land to carry. If the cattle are to yield a profit which would be accepted as satisfactory in Countries where stock-keeping

is strictly economic, the bullocks would require to be fully employed, the cows to be of a heavy milking strain and the manure to be carefully conserved and returned to the land." The cattle in India was not only excessive in number but also generally extremely poor in quality. A few good indigenous breeds existed but they too were affected by the process of deterioration. Unless a determined effort to place the industry on a high and sure level of efficiency is taken up by both the Central and Provincial Governments, the food production would not be increased.

Farm Equipment: In most parts of India, the cultivators are using wooden ploughs which merely scratches the soil. They cut the harvest by hand, thresh the grain under the bullock's feet, and winnow cereals by the agency of the wind. Efforts are however being made to replace these primitive implements by improved ones. But they form only a small percentage. One of the most important methods of increasing food production has been the introduction of farm-machines. As a result of engineering advances, there exists in America a kind of farm machinery suitable even to the small farms. The one country which has tremendously improved the technical progress and mechanical equipment in agriculture is America. The tractor cultivation has become very common. The new harvester thresher is another innovation. All these make important contribution towards reducing the cost of production.

Without mechanisation the American farmers could not have produced the food crop necessary to sustain their war effort and maintained their large population. On thousands of farms, farmers, their wives, and children with the aid of machinery carry on successfully, despite the absence of young men who went to war and produced as much crop, sometimes more than the quantity, which was being produced previously. It is chiefly due to farm equipment that made even small farms more secure in America and this improved their ability to compete with larger farms, making them at the same time as efficient business concerns and better places to live in as possible. Should not India take a lesson from this?

Varieties of Seeds: The area covered by seed of improved varieties of food crop is only 10.3 per cent of the total area cultivated in India. More attention is often paid to the use of seed of improved varieties of commercial crops like sugar-cane, cotton and Jute than to rice and millets which form the largest proportion of India's food crops. The rapidity with which the improved varieties of sugarcane gained popularity in the U. P. and Bihar, and of wheat in the new colonies of the Punjab shows that the Indian cultivator is shrewd enough to adopt any improvement if its benefit is demonstrated to his satisfaction. Improvement of seed and investigation of its adaptability to a particular soil and climate and local conditions requires long and patient research and can be undertaken by the Agricultural Department.

Manure: The preliminary problem in India is not so much to seek the aid of science to make nature give more as to restore to nature what it has been despoiled of. The soil should be given back, either by the use of natural manure or artificial fertilizers, the chemical elements of which it has

been denuded. Farm yard manure is the only available manure to the ryot and even that is not put to its proper use as it is insufficient. The deficiency of manure will however continue both in quality and certain essential elements like Nitrogen, Phosphoric acid, potash, and lime. The Central Government seem to have acknowledged their responsibilities in respect of nitrogenous fertilizers by adopting a scheme for manufacturing them and they have consulted the Provinces as regards suitable localities and sites for factories and the local demand for fertilizers. It is also necessary that Provincial Governments should undertake a very early survey of soils in order to find out where soils are deficient in essential chemicals. As regards compost the data collected by the Indian Institute of Science, Bangalore, show that for every 10000 of urban population about 1000 tons of compost manure could be obtained annually and it would be possible to supply about a crore of tons of compost manure by a proper utilization of waste.

Irrigation: Dry farming is the oldest method practised in India and even now the largest area of land depends upon rain for its cultivation. To increase food production an assured source of water supply is very necessary. On account of the precarious nature of the rainfall, the supply of water in India is uncertain. Artificial sources of supply ensure timely irrigation and consequently proper germination, grow in and maturity and such sources are canals, tanks and wells. Exploitation of subsoil water by electric lift is another source.

Governments alone have sufficient resources to undertake the construction of canals, electric tube wells, river pumping schemes and storage reservoirs. Works of irrigation should therefore continue to remain the primary responsibility of the state. Unless the respective Governments take up large schemes of irrigation and bring more areas under wet cultivation, Food Production cannot be increased.

Much of the field work connected with the distribution of water like fixation of outlets, allocation of supplies to fields, repairs and maintenance of channels, assessment and collection of water rates can be delegated to cooperative societies. They play a useful part in some parts of India in executing minor irrigation works like the sinking of wells, erection of small dams, and construction of tube wells. In Bengal there are 1020 irrigation societies and in Madras there are 15. The construction of minor irrigation works should be entrusted to cooperative societies in all parts of the country, in preference to individual contractors. There is greater scope both for the Governments and to the Cooperative Societies to play in this field of useful work.

Transport: Transport facility is another factor which contributes very much to the increase of food production. India is very deficient in the means of transportation. With an area of nearly 15,80,000 sq. miles, she has only about 41,000 miles of railways. Whereas Europe, excluding Russia, with an area of 16,60,000 sq. miles has 1,90,000 miles of railways. The proportion of road mileage works out at 36 miles per 100 sq. miles whereas the corresponding figure for U.S.A. is 100 and for U.K. 200

miles. The position regarding coastal shipping, inland water transport, is also unsatisfactory. If farm equipment and farm products are to move freely within the country, a large expansion of communication is very essential and such schemes of expansion should be undertaken by the Provincial Governments.

Agricultural Credit: Regarding credit facilities, there is lot of things to mention. Suffice it to say that Indian cultivator needs financial help and this can be divided into three divisions, Short-term credit for purchasing seed and fertilizers, paying wages, maintenance of family and meeting other expenses such as payment of land revenue, rent, and interest on debt; medium-term credit for purchasing livestock and implements, and long-term credit for purchasing land and expensive agricultural machinery and for effecting permanent improvement and these have become common feature throughout the country.

Several committees and commissions have surveyed the problem of agricultural credit in India in the past. The Gadgil Committee recently appointed by the Government of India have pointed out that it is not possible to evolve a sound system of agricultural credit without tackling the problems of the agricultural economy as a whole. This will naturally involve problems like proper distribution of population between agriculture and industry, the creation of economic holdings, the maintenance of agricultural prices at a profitable level, the provision of adequate irrigation facilities and improved transport and the establishment of subsidiary industries. It is also necessary to reduce the burden of past debts which is a drag on productive activity. The chief recommendation of the Gadgil Committee is that state aid should be given in a very much larger measure than has been done hitherto in the direction of rural credit and much of this work should be done through several types and cooperative organisations or by agricultural credit corporations.

The various resources that are necessary for increasing food production have been analysed to some extent and it is clear that these resources are so far not very much developed in India. Indian cultivator is beset with difficulties and needs help and guidance at every step By the use of improved varieties of seed and manure and implements, with timely and adequate water supply, by the protection of crops from the ravages of pests and diseases and generally by fully developing the resources for production India can surely raise the yield of food crops by more than 50 per cent within a period of 5 to 10 years.

The Ryots as a class are too poor individually to undertake most of these improvements. The Provincial Governments should appoint expert Committees to make suitable and practical recommendations to increase food production. They must fix a target figure and try to produce that at any cost. Those who exceed the target fixed should be suitably rewarded by the Central Government. The Government may also create such voluntary non-official agencies which would harness local talent and which would work as useful instrument of economic development.

China is bigger than India and its density of population is as high as that of India or even higher in some parts. Is not China producing as much per acre as any other country in the world? Is not its total yield higher than those of India? Is it not supplying and manufacturing sulphate of ammonia and other fertilizers? If it has achieved higher agricultural development and food production than India, why not India? The main item by which China has maintained its soil fertility is human excreta and urine and much of this is wasted in India. India has to take such lessons from every country and see that it should produce more food crops. The secret of success in all types of business is the working of the details. Unless both the Central and Provincial Governments chalk out a programme of food production in all its details for every nook and corner of the country and try to complete it within a prescribed time and reach the target fixed, India will never be self-sufficient in regard to food, which she cannot afford to see any longer. In fact food production requires an effective and immediate attention of both the Government and its people.

FOOD SELF-SUFFICIENCY CAMPAIGN IN EAST PUNJAB

The province of East Punjab requires about 15 to 17 lacs of tons of cereals annually to feed its population of 14,250,000 souls and if the people ate nothing but wheat the deficit in the present wheat production (without making any allowance for seed etc) would be to the tune of 7,20,000 tons, which will cost India, if imported from abroad, more than 20 crores of Rupees.

A study of the East Punjab's food poisition can never be complete without an accurate idea of the requirements of the people as well as the supplies available.

In the statements given below an attempt has been made to work out a reasonable estimate of our requirements. Statements I and II are based on an application of the "Adult Male Unit" method to the mid-year, 1949 population of East Punjab. In other words, the entire June, 1949 population of the province which included men, women, and children of all ages, has been converted into an equivalent number of adults to simplify calculations on food requirements:

REQUIREMENTS (Statement-I)

Total Population Mid-year 1949 (rounded)	14,250,000
Divided into:- (Rural)	12,200,000
(Urban)	20,50,000
Reduced to Adults (Rural)	92,50,000
(Urban)	15,50,000
	108,00,000

Demand

Rural at eight chhataks per head	15,41,667 Tons.
Urban at six chhataks per head	19,3,746 Tons
Total Demand.	17,35,413 Tons.

(Statement-II)

Total Adult Population Mid year 1949	19,800,000
Total Demand at 14 oz. per head per day for one year	1,518,000

In the statement I the needs of the urban as well as rural areas are properly differentiated and due allowance is given to the rural areas because of the mainly manual work done by the people living in the villages. Eight Chhataks of the

feature of this plant is that it is not grazed or browsed by cattle and at the same time spreads through its own seed, which is produced in abundance. The leaf, which yields camphor, is easy to shake off from dry branches and unlike most of the aromatic plants can be stored like hay, in heaps, in the open for several months, if so required, without the loss of camphor. The recovery of camphor from the leaves is simplicity itself and the necessary equipment for distillation can be set up locally at a very small cost.

As a Cottage Industry

The above proposition offers a scope for a suitable cottage industry. Villagers can grow the plant on waste lands, edges of fields, house compounds, etc., cut collect and store the leaf, and either distil the camphor themselves during the slack season in winter or have it distilled in a village plant run on cooperative basis. Camphor so collected may be sold to a central factory for purification, grading, etc. Camphor produced in Formosa was likewise used to be taken to Japan for purification and sale.

Cultivation Cost and Camphor Yield

The cost of cultivation is low and once it has been established the recurrent cost is practically negligible. The yield, as experimented in Dehra Dun, is about 80lbs. of camphor per acre per year. Oil which is about 60 lbs. is in addition. This yield, can, however, be improved through intensive farming and manuring.

Effects on Public Health

Indications are that the plant is a mosquito repellent and should this prove to be correct, it will be a boon to the country by reducing the malaria incidence thereby helping in the improvement of the general health of the people. This will enable vast malarious tracts, lying uncultivated, to be colonized.

Possibility of Cultivation on a Wide Scale

Seed Supply:—Starting with a few seeds, some 4 years ago, about 15 acres have now been grown in different places, as an experimental measure. It has now passed that stage and is ready to be handed over to the public.

The seed is very small and about 60,000 go to an ounce. About 20,000 plants (2'x1') are required for an acre. Forest Research Institute can collect and supply about 10-15 lbs. of seed per year, provided the small ocimum farm at the Forest Research Institute is maintained.

Plant Requirements

Soil:— As stated before the plant can be grown in different types of soils and even on poorly drained ones. Fertile and well drained soils will without doubt yield better quality and quantity. Given the requisite moisture its seeds like the Pipal (Ficus roligiosa), germinate even on the smallest pockets of soil and even on brick joints of floors, etc.

Water:— This plant is harder than its sister plant, the sacred Tulsi (Ocimum sanctum) and wherever the latter can be grown the former will grow.

Temperature:— The plant can stand fairly high temperature provided it gets sufficient moisture. Frost effects it but does not kill. After the frost season it again sprouts. The effect of drought and frost can be minimized by arranging the time of cutting and by covering the stumps with mulch, earth, etc. or irrigation.

Its weedy nature tends to oust even rank growth of grass. This fact could be taken advantage of in reclaiming grassy wastes and such areas as Tarai where it would further help in eradicating malaria. Already a party has been persuaded to try it out in Kicha Colony, near Rudarpura (between Rampura and Haldwani) under our directions, by some refugees who were allotted land by the U. P. Government a few months ago.

Forest Research Institute can give all the technical advice for raising and propagating the plant if so required.

SOME MINOR RICE PRODUCTS IN INDIA

By M. R. Panikkar

RICE is the main food crop of the densely inhabited tropical and Subtropical regions as wheat is for the sparsely populated Temperate regions. It is the only useful food grain grown under the swampy conditions and is wholly raised by manual labour except perhaps in a few Western countries, unlike the highly mechanised wheat crop which is associated with communities with higher standard of living than rice. India's share of the total world rice production comes to about 26%. Quantitatively, it is the foremost crop of India, and an average of about 60 million acres are under cultivation, the annual yield fluctuating 19 million tons. It is extensively cultivated in the Eastern and Southern parts, and is of unique importance to Bengal, Madras, Bihar, Orissa, C. P. and Assam. It is a valuable crop in the U. P, second only to wheat and is of equal importance covering larger area than any other crop. Bombay has about two million acres under rice. In Travancore and Cochin it is the main food crop.

In addition to the normal consumption of rice in the cooked form as a staple food, a considerable quantity of rice is consumed in India as parched rice products, and which can also replace the foreign imports of similar nature. Rice is consumed in so many other ways too, so that suitability for particular preparations has almost become specificities. Consequently rice breeders and agronomists should now possess an elementary knowledge of them, as they are expected to take a hand in making rices suitable for particular uses.

The *Pokkal* rice, viz., the left over rice kept over night for the next day's break fast, is consumed throughout the rice areas especially by the labour classes. Parboiled rices are generally preferred for this, as they retain freshness for longer period than raw ones when steeped in water. It is quite palatable even after 36 hours, and do not turn sour. Usually bold or coarse varieties with chalky or starchy kernels are preferred for the preparation, as they give a characteristic flavour when kept in mud vessels. In Orissa, the long fine *Sunakhadi* Type 812, though one of the best rices of the area is not a success as pokkal.

Kanchi is a sort of gruel prepared with rice and was the general breakfast food of the poor in Kerala till coffee and Tea displaced it. *Kanchi* prepared with fine broken rice is considered to be excellent food for invalids. Slightly glutinous or starchy coarse parboiled rices are preferred for *Kanchi* by the poor, and the left over is considered as the poor man's breakfast.

Pulao is a salty preparation made of rice while *Zarda* is a similar though sweet preparation. Medium and fine scented mature rices are selected for these. Kichri is a favourite dish of North India and as the name indicates is a mixture prepared by boiling rice and pulses together. The dish is largely eaten in winter and soft starchy rices are preferred. *Kheer* and *Payas* are delicacies made with rice and sugar, mostly during religious festivals, while *Farni* is a similar preparation made out of ground rices preferably of coarse variety.

cereals are allowed for the people in the rural areas, six chhataks for those in the urban areas.

The Statement II is based on a flat ration of seven chhataks of cereals per day for an adult. This ration of seven chhataks of 14 ozs. is expected to give 1600 calories to an average man who requires 2600 calories to keep himself going. The rest can be had from other articles of diet, like vegetables and oils.

An estimate of the Mid year 1949 population is arrived at after working out certain recognized calculations on the 1941 census figures and it is also based on the assumption that the number of Muslims leaving the districts in the riots was replaced by an equal number of refugees from Pakistan.

(SUPPLIES)

ESTIMATED PRODUCTION

(Final forecasts) for 1948-49	2,459,500
Less 25% as for seed etc	6,14,875
Net Supplies (of all cereals)	18,44,625
Wheat net supplies	735,320 Tons.
Rice net supplies.	80,000

On the basis of the two figures of requirements in statement I (tons-1735,413) and statement II (tons 1518,000) it can be stated that our requirements of cereals lie somewhere between 1,700,000 and 1,500,000 tons.

On the production side net supplies based on the final forecasts for the year 1949 are 18, 44,625 tons (total production) (2,459,500 tons reduced by 25% for seed and wastage. The over all allowance of 25% for seed and wastage is worked out of the identical data for all cereals. In the case of rice and wheat the figures are eight and nine percent respectively and in the case of gram the corresponding figures are as high as 73 per cent).

Placed against our requirements of say 17,00,000 this gives the semblance of a surplus.

But there is much more here than meets the eye.

We are a Deficit Province

We are a deficit province because the "supplies" figures are inflated by inclusion of "inferior" grains like gram, bajra, maize and millet and these grains are not generally consumed by the people. We are a deficit province because our wheat requirements have gone up on account of the influx of wheat eating refugees from Pakistan.

Not so Bad

An analysis of our requirements as well as the supplies of wheat, gram and rice and other foodgrains reveals that by a rational adjustment of our diets and increased production the shortage of wheat can be remedied.

Fortunately, our dietary habits do not depend solely on wheat. In the South-Eastern parts (Gurgaon, Rohtak, Hissar) and the Himalayan tracts people use the inferior grains.

Elsewhere maize is popular in the hill areas. Gram bread is also used in winter and barley in spring.

It has been estimated that out of 14 oz. diet of an average Punjabi wheat is generally 8, Rice 1, Gram 1.2, barley 6.5, millets 1.8 oz. respectively.

This estimate is arrived at after an assessment of all the constituents of an optimum diet necessary to maintain an adult in a condition of desired efficiency.

Calculated on this basis the deficit in wheat comes to 127,000 tons and 28,000 tons in Rice. Taking the surplus in gram into account, the overall deficit in foodgrains is of order of 38,000 tons.

The problem is not merely one of wiping off the overall deficit, but of bridging the gap between our production and requirements of wheat and rice. This is particularly necessary because it is not possible for people to change their diet radically.

CAMPHOR AND CAMPHOR OIL PRODUCTION IN INDIA

By **P. N. Deogun**

MOST of us are familiar with camphor but only a few know its real value. Out of its many and varied applications its uses in the manufacture of celluloid and allied industries, including the photographic film is the most outstanding, and the greater part of world's production of camphor goes to feed these industries. The oil which is extracted along with camphor finds its use in perfumery, and medicine etc., and the fails are employed in the production of certain classes of varnishes, polishes, illuminants, etc.

The real importance of camphor lies in its being a strategic chemical, and any country would prefer to be independent of foreign imports.

Supply

India depends wholly on foreign countries for her requirements of camphor. During the war, the price of camphor rose; from about Rs. 1/8/- to more than Rs. 10/- per lb. and before the war the average imports were 18,90,458 lbs. valued at Rs. 23,41,886 per annum. This was so when none of the celluloid and allied industries, which consume the largest proportion of camphor had been planned for the country. If these industries are to develop, as they must, our demand of camphor will naturally increase several times and we shall have to import it at a large expense. It is unlikely that the price of camphor will come down to its prewar level.

Discovery

India, more or less, has failed to produce camphor from *Cinnamoumum camphore* tree which has been the main source of natural camphor and which grows wild in Formosa. Even if this were a success we would have to wait for 50 years before the tree matures and can be cut for camphor. The manufacture of synthetic camphor in India is also not an economic proposition for a variety of reasons. This too has been explored by experts. Under the circumstances the only possibility lay in discovering a camphor-rich indigenous plant, from amongst the many which contain camphor. Happily this has been discovered in a common or garden plant "Tulsi" which is so well known in our country. It is a matter of considerable good fortune that a variety of this plant has been found which contains nearly 5% of camphor and oil, and can be cultivated almost everywhere in the country, on a large variety of soils and under varied climatic conditions.

The New Plant

It has a woody nature and requires no special attention after its introduction. The more it is cut the better and bushy form it develops. The most interesting feature of this plant is that it begins to yield camphor after about 4-6 months of its introduction, and is capable of 3-4 cuttings per year. It is easy to raise, is not fastidious about climatic and edaphic requirements and can be grown on all types of cultivable lands, on edges of fields, on road sides, in house compounds under open tree crops, on fallow and other poor lands. Another interesting and useful

Puttu is another rice preparation and is a wholesome food cooked in steam. A special variety of rice is grown for the purpose in Madras. According to Ramiah, these rices do not really contain gluten, but starch is present in a different form. For *Dosai Iddali*, etc. and other preparations of the South India, rice is used in powdered or pasty form, and par-boiled starchy coarse rices are welcome; while for the *appams* and *addais* of Malabar, raw, starchy coarse rices are preferred.

Broken rices are those which are less than ¾ of the whole kernel. Parboiling lessens the incidence of broken grains in starchy and chalky varieties. Generally it occurs upto 15% in fine, 10% in medium and about 56-70% in coarse rices. Broken rices marketed in India amount to 10% of the total. In addition to these, large quantities are imported from Burma, Indo-china and Thailand. It is largely consumed by the poor either as *kanchi* or as cooked rice and only limitedly used for poultry or stock feeding unlike in other countries. Hand loom industries and laundries use it for sizing. The South Indian *Uppuma* which is something like a rough and ready sort of *pulao* is some times made out of these broken rices. However, the normal market requirement of broken rices in India is estimated to be about 1¼ - 1½ million tons per annum.

Rice flour is also a major rice product and prepared by grinding broken or coarse rices in hand or power driven *chakkies*. In Sind, South Punjab and in the Rohilkhand Division of the U. P., it is produced on a commercial scale to make rice chapathis. Ground flour is also sometimes used as base for face powder, and there is a small outlet for the same in indigenous cosmetic trade, which though bear no comparison with those of China or Japan. The total quantity of rice flour produced in India is roughly estimated at 50,000 tons of which about 48% or 20,000 tons are manufactured in Sind, mostly for local consumption. A typical bold variety of rice called Ganja, is the most popular for flour making in Sind.

Unlike Maize and wheat starches, rice starch manufacture has not really started in India. Rice starch, however, is used by urban laundry men and about 3-4 thousand tons are utilised annually. Including those used for sizing materials in hand-loom industry, the annual consumption may come to about 5,000 tons in India.

HONEY BEES AND GROW MORE FOOD

By H. Viswanathan

THE XI all India Bee-keepers' Conference & Bee Exhibition will be held at Naudgad, Belgaum District, Bombay Province, on the 2nd, 3rd, and 4th of December, 1949, under the auspices of the Nandgad Bee-keepers' Co-operative Society, Ltd.

Eminent leaders, Provincial Ministers, Constructive Workers, Officials, and the General Public interested in the development of Bee-keeping and Village Uplift work from all parts of India are expected to participate in the various programme that will be held during the

three days of the Conference. This Conference is being held at the most opportune moment when the whole country's attention and energy is drawn to strengthen the "Grow More Food" Campaign. Government at the Centre and in the Provinces want and issue directions for the active co-operation of the public to produce more food grains, vegetables, fruits and articles of necessity. Every one has a share in this campaign.

The vital roll the *Honey Bees* play and assist mankind to produce more food crops, better seeds, honey and wax has not been fully known to or appreciated by many an Indian farmer as he is ignorant of the facts known to others of his kind in other countries -Viz., United States of America, Canada, England (United Kingdom), Australia, New Zealand, Russia and the most advanced countries in the continent of Europe. It has been proved by Scientific observations that as a successful pollinator of fruits, farm crops and other seeds, there is nothing to equal the Honey Bee and its value in this respect is of a very high order of national economy-far outweighing its value as a honey producer. For this purpose, the bees are given good shelters and care in other countries and are imported in ship loads for distribution where they are a scarcity. Like cattle and sheep and other farm animals the honey bees are very valuable and indispensable to advanced Agriculture and Fruit Growing. Further, Honey produced by these winged darlings from cultivated and uncultivated lands will indeed go a long way to mitigate the periodical sugar scarcity and crisis the country has to face. Honey is a most nourishing and sweet article of food produced by mother Nature in her laboratory. It is not like sugar, a drug manufactured in the factories which creates a craving habit in the consumer. Therefore, India must build up this industry also as it is being done in other countries, should she be self-sufficient in her food problems before the target date fixed by our revered leaders. There is immense scope in the country. The Himalayas, the Western Ghats, the Eastern Ghats, The Vindhyachal, the long coastal strip, the innumerable valleys carved by the waters of the Ganges, the Indus, the Brahmaputra, the Godavari, the Narbada, the Tapti, the Krishna, the Canvery etc. and the vast green fields of the plains stand virgin soil to this industry. It needs only an efficient organisation and concerted action and a drive.

As such, it is requested that all those interested in the "Grow More Food" should kindly make it convenient to attend the Conference, take part in the deliberations, pool in and share knowledge and experience, shape the policies to be adopted for rapidly developing the industry country wide etc. etc. or send in their messages or valuable suggestions for the success of the Conference & Exhibition. The Reception Committee is making all arrangements to have it on a grand scale. All full particulars can be had from the Secretary, Reception Committee, the 11th All India Bee-keepers' Conference, Gangdhigram-Nandgad, (Dist. Belgaum).

"Rural India," Volume XII, No. 1 to 11

JANUARY, 1949 to DECEMBER, 1949

INDEX

ARTICLES

Agrarian Reforms in India —*D. Krishna Iyengar* 316
Agrarian Reforms in India —*Mahesh Chand* 274
Agricultural Credit in India —*Mahesh Chand* 56
Agricultural Extension Service in the United States, The —*Henry W. Spielman* 400
Agricultural Finance-Reserve Bank's Role Surveyed —*Prof. G. P. Gupta* 150
Agriculture and Science —*Rao Saheb H. M. Desai* 309
Agriculture in Madhya Bharat Union —*Prof. P. L. Golwalkar* 380
All Round Nation Building Programme —*Swami Vishwanand* 389
Alternate Foods —*Sir S. V. Ramamurty* 82
Bee-keeping in the Southern Division of the Province of Bombay —*S. K. Kallapur* 339
Brief Survey of Bee-keeping work in Bombay Province, A —*H. Viswanathan* 455
Camphor and Camphor oil Production in India—*P. N. Deogun* 493
Cattle in India-Problems of its Development —*H. J. Makhijani* 440
Cocoa-Trees —*V. S. Bendrey* 371
Compost Manure from Water Hyacinth -A Pestilential Weed —*P. Padmanabha Iyer* 240
Compost Production and the Grow More Food Campaign —*Dr. C. N. Acharya* 278
Congress President on Nation-Building 4
Cooperative and Multipurpose Societies —*Shiva Nath Katju* 28
Cooperative Finance For Rural Industries —*Prof. M. G. Bokre* 407
Cultivation of Paddy and Means to Increase its Production —*G. S. Barve* 243
Dairying in India —*Rameshwar Nigam* 39
Democracy on the Land in Britain —*L. F. Easterbrook* 73
Deori Village Centre Trebles its Food Production in Ten Years —*R. G. Gupta* 267
Economics of Handloom Weaving Industry in the U. P. —*Ved Prakash Sharma* 472
Economics of Mechanisation of Agriculture —*G. D. Agrawal* 215
Establishment of Regulated Markets —*T. T. Mulwani* 282
Face the Facts —*G. B. Sir Deshpande* 436
Factors that Created Our Food Problem —*J. S. Chaube* 305
Farming and Prosperity —*Jabir A. Ali* 131
Farm Level of Living in the United States —*Howe Bancroft* 437
Fishery Research —*Dr. S. T. Moses* 75
Fish Production —*Dr. S. T. Moses* 251
Food Going Waste —*R. N. Muttoo* 126
Food Production and Development of Agriculture —*R. D. Mehra* 293
Food Production by Municipalities —*Dr. C. N. Acharya* 390, 422
Food Production Drive in Bihar

Food Production in North Kanara —*V. R. Hegde* 458
Food Self -Sufficiency in East Punjab 491
Forest Strips and the Kanara Farmer —*H, T. Koppikar* 454
Growing More Food in Bihar —*Prof. L. P. Sinha* 230
Grow More Food Campaign, Why it failed and What shouldbe done, The —*G. Jogiraju* 133
Grow More Food or Perish —*Mira Behn* 365
Grow More Fruits-Part II E & F —*B. L. Choudhri* 30 & 101
Grow More Trees —*P. N. Devgun* 332
Harness The Legumes for Increasing Food Production Potential —*D. G. Dakshindas* 235
Honey Bees and Grow More Food —*H. Viswanathan* 496
How to Increase Food Production —*Bishan Mansingh* 146
How to Increase Food Production —*D. Krishna Iyengar* 486
How to Make India Self-Sufficient in Food Prodnction —*S. Sen* 137
Ideal Organisation for the Development of Agriculture in India, An —*G. D. Agrawal* 139
Import and Culture of Mango Trees —*V. S. Bendrey* 333
Increased Food Production by Educating the Cultivators —*D. H. Buyf* 392
Increased Food Supplies through Scientific Storage —*Dr. Trevor I. Williams* 327
Increasing Food Production through the Supply of Manures —*Jabir A. Ali* 181
India Begs Food-A Pathetic Paradox —*K. M. Desai* 299
Indian Food Problem, The —*Dr. C. N. Acharya* 177
India's Food Problem —*A. Subbiah* 142
Leader's Messages on the Second Anniversary of India's Independence 349
Mechanisation of Agriculture with Special Reference to Cultivation of Waste Lands —*Dr. V. V. Sayanna* 109
Military and Food Shortage, The —*J. C. Kumarappa* 364
Multipurpose Cooperative Societies —*Prof. Mahesh Chand* 96
Multipurpose Societies —*T. Rangaswami* 329
New Problems of Adult Education —*Dr. K. N. Kini* 469
Notes on Cooperative Farming —*Sir Manilal B. Nanavati* 20
Notes on the Cultivation of Deciduous Fruits —*B. L. Choudhri* 373
Opinions 165
Our Agriculture —*Rao Sahib H. M. Desai* 295
Our Food Problem —*B. M. Pugh* 359
Our Food Problem —*J. C. Kumarappa* 183
Our P[illegible] with Special R[illegible]s to the Grow More Food C[illegible]mpaign —*Dr. V. V. Sayanna* 187
[illegible]an for the Development of Cottage Industries, A —*V. P. Sharma* 367
Population Control-An Urgent Problem —*Rao Bahadur Sir T. S. Venkatraman* 54
Population Versus Food Supply —*V. G. Ramkrishnan* 254
Possibilities of Hybrid Maize in Bihar —*S. K. Mukherjee* 467
Poultry in Rural India —*Rameshwar Nigam* 369
Practical Steps to Make Food Production Drive a Success —*G. Jogiraju* 179
Problem of Rural Indebtedness, The —*D. A. Pundlik* 289
Problems of Indian Agriculture —*M. S. Swaminathan* 209

Produce for Prosperity
—Dr. S. B. Singh 320
Production Education-The Need of the Nation —Dr. K. N. Kini 384
Prohibition and Amelioration
—O. Mohanasundaram 409
Prospectus of the Rural Workers' Training Institute, Pohri (Madhya Bharat) 1949-1950 79, 120 & 157
Providing the Incentive for Increasing Food Production
—Dr. E. M. Hough 296
Rama Raj ? —R. N. Muttoo 92
Rationalisation of Agricultural Industry
—G. B. Sir Deshpande 226
Re-orientation of Agricultural Policy
—S. V. Agarwala 314
Re-orientation of Agricultural Policy
—V. S. Agarwala 94
Resolutions 173
Resolving the Food Tangle
—Mahesh Chand 196
...vise Defective Procurement Policy
—R. ... Sidhwa 180
Rura... India —Biswanath Das 129
Rural ...dership through Rural Universities —Dr. K. N. Kini 43
Rural Soc... Work and Reconstruction
—J. C. Kumarappa 89
Rural Urban Relationship
—Dr. D. S. Chauhan 69
Scheme for Improvement of Agriculture, A —K. B. Cazi 154
Scope and Method of Teaching and Research in Agricultural Economics in India —R. S. Shivalkar 66
Scope for Increasing per Acre Outturn of Food Crops —R. S. Shiwalkar 201
Seed Factor in Potato Production in India S. L. Kapoor 4...
Self-Sufficiency in Manures to Make India Self sufficient in Food
—R. S. Shiwalkar 323
Sheep Numbers and Their Significance
—H. K. Lall 335
Some Minor Rice Products in India
—M. R. Panikkar 495
Some of the Measures for Increasing Food Production —V. K. Kogekar 194
Some Recommendations on Stepping up the Production of Fruits and Vegetables in India —S. S. Bhat 99
Stepping up the Production of Fruits and Vegetables in India
—S. S. Bhat 248
Suggestions 166
Think Before You Act
—J. C. Kumarappa 124
Three hundred American-Hindu Farmers Could Feed India
—Ram Nath Puri 257
Time Element in Economic Planning
—Dr. D. S. Chaube 429
Towards a Programme of Food Sufficiency Prof. N. G. Ranga 49
U. P. Zamindari Abolition Bill, the
—R. L. Pancholi 451
Village Service —Dr. K. N. Katju 357
World Population and World Food Supplies —Sir John Russel 477

EDITORIALS

Absence of Factual Planning 421
All India Food Production Conference, Pohri, and the Crisis in Madhya Bharat Government 161
All India Food Production Conference 1
All India People's Food Council 461
Do or Die on Food Front 121
Eleven Years 381
Food Debate in Parliament, The 81
Food Self Sufficiency by 1951 261
Let Fighters on Food Front Meet 41
Task Before the Food Commissioner, The 301
Two years of Independence 341

JL
V3/M2 N27 RU
N4 7.10 -12