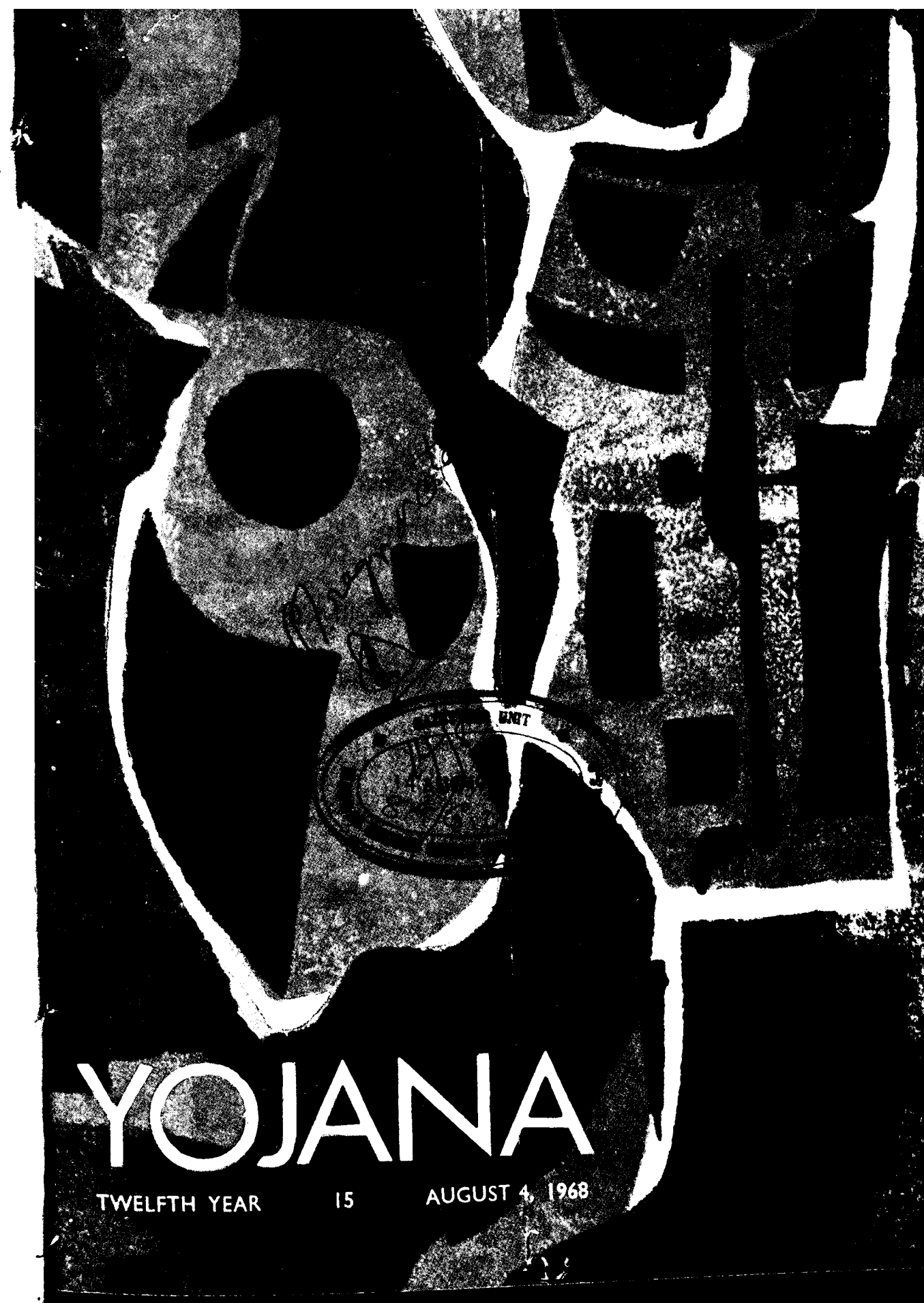
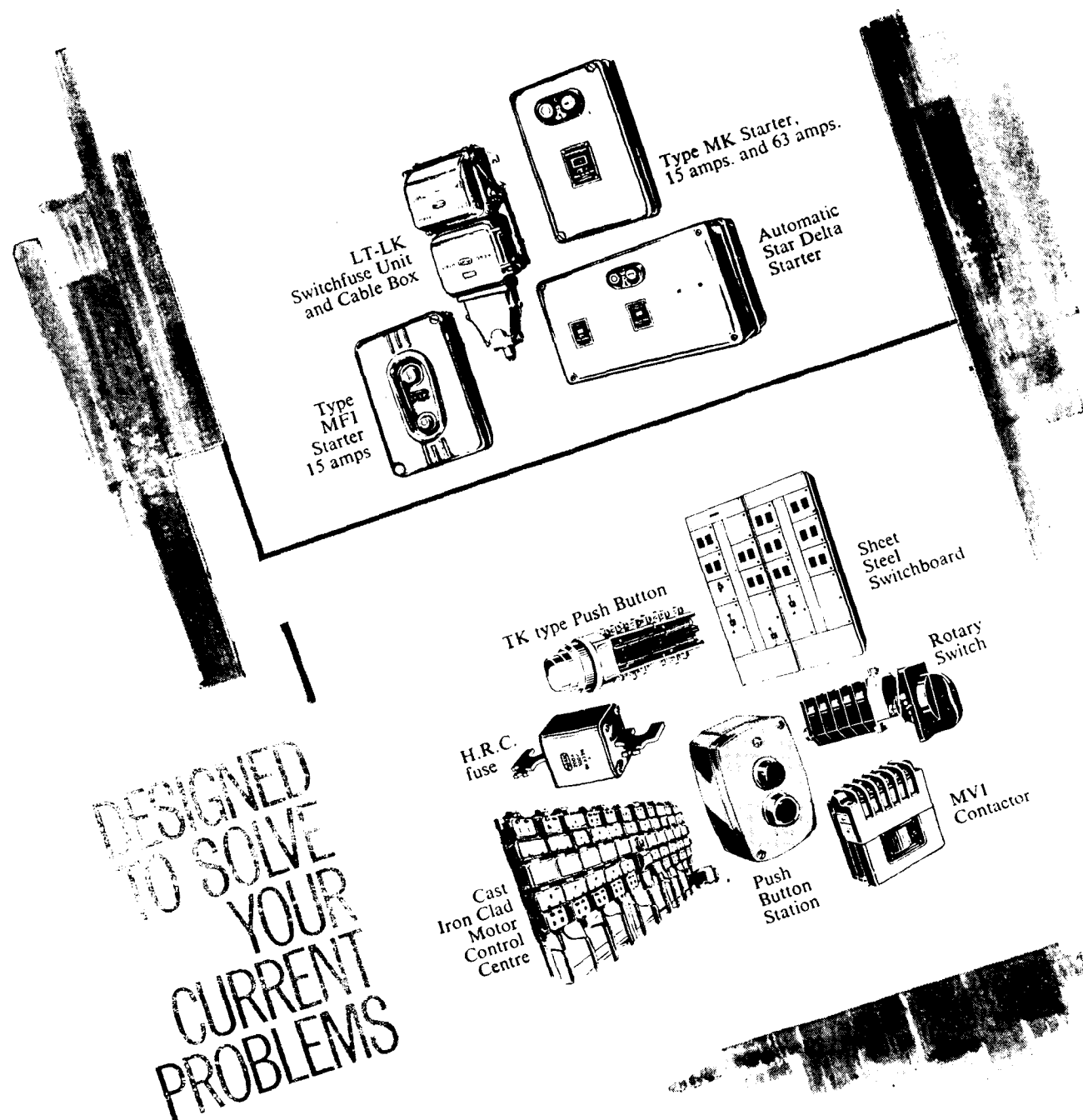


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# YOJANA

TWELFTH YEAR 15 AUGUST 4, 1968



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## YOJANA

Fortnightly Journal published on  
behalf of the Planning  
Commission

Vol. XII

No. 15

August 4, 1968  
Sravana 13, 1890

### LEST WE FORGET

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... tobacco, opium and the like. The village will maintain a village theatre, school and public hall...

—Mahatma Gandhi

Cover designed by Jivan Adalja

Yojana seeks to carry the message of the Plan, but it is not restricted to expressing the official point of view.

Chief Editor:  
Saradindu Sanyal

Assistant Editors:  
Madhav Krishna Pardhy  
Rosscote Krishna Pillai

Photographic Officer:  
T.S. Nagarajan

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## AGRICULTURAL CREDIT

THE breakthrough in agricultural production, which has been dramatically spotlighted by last year's record crop, has clearly demonstrated that it is within our capacity to get more out of land. This significant development in Indian agriculture has been the result of a variety of factors, perhaps the most important among them being the crucial inputs that the farmer has been able to utilise for increasing production. It is the use of fertilisers, high-yielding varieties of seeds and better tools that has made our comparative affluence on the agricultural front possible.

This is a happy augury for Indian agriculture, which has long been dormant and moribund, but is now beginning to look up. However, the important thing is to enable the farmer to go in for the inputs essential for increasing production. In this context, the question of credit, which has been described as the life-blood of agriculture, assumes vital importance. Indeed, if the farmer is to play his destined role in the economic regeneration of the country, he must have the tools to make his labours worthwhile.

The Indian farmer has always been in debt, and the moneylender has always had the peasantry in his grip. Until recently the village moneylender was the only source of credit available to the farmer. The situation has changed since Independence, when the co-operative banks entered the field; but the traditional moneylender still has a hold on agricultural finance. Out of an estimated Rs 2,000 crore credit needs of farmers, a meagre 15 per cent is provided by co-operatives and a comparatively small amount by the State Governments. This leaves the moneylender still very much in the field, and the farmer has no alternative but to submit to usury.

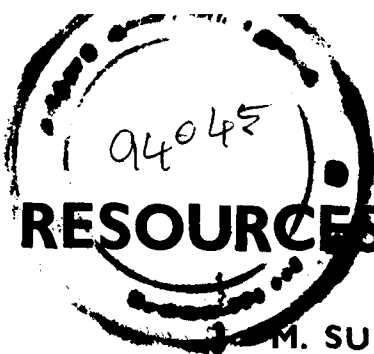
Commercial banks in the country have done precious little to help the farmer with credit. For instance, in 1962-63 agriculture received Rs 4 crore of the total bank advances amounting to more than Rs 1,600 crore. However, commercial banks are paying greater attention to farm credit, and in 1967-68, they advanced Rs 18 crore to co-operative and land development banks; and they are expected to subscribe Rs 175 crore towards debentures of co-operative banks during the Fourth Plan period. The Agricultural Credit Corporation and the Agricultural Refinance Corporation also serve as channels of farm credit.

Despite this, it is apparent that the quantum of credit required for agriculture is far in excess of the amount being made available from various sources for the purpose. On our capacity to bridge this gap will depend, to a great extent, the progress of agriculture.

There is one aspect of rural credit that should be kept in mind, lest it ceases to be an asset and instead becomes a liability. Credit by itself is life-blood, but unless there is a proper mechanism to pump it to the essential parts, the body of agriculture will not be restored to robust health. It is, in fact, a double-edged weapon which, in good hands, can boost agriculture, but can quite easily turn out to be a liability.

In the final analysis it is the human element that matters, because the farmer alone can use it as an instrument for increasing production or frittering it away on non-essentials. As the Rural Credit Survey Committee put it, rural credit "must be directed principally towards improving production". To ensure this, the Committee emphasised the need to keep an "effective control over the use to which the credit is put". But all this will mean little unless the farmer himself realises his own responsibility in the matter. Ultimately, therefore, credit, as such, will have little meaning unless the human element is equally conscious of its part.

# FOURTH PLAN APPROACH 5 COMMENTS



## RESOURCES FOR THE PLAN

M. SUNDARA RAJAN

Finding the money for the Plan is not just a matter of imposing a couple of taxes; it calls for far-reaching decisions on several economic issues. The more one travels off the beaten track, particularly in the rural sector, the better.

THE choice of specific means to mobilise additional resources is essentially a political decision. But there are certain economic imperatives, which cannot be ignored. An analysis of the resource potential for the Fourth Plan would indicate that there is no need for despair. It all depends on certain crucial policy decisions.

The Planning Commission has indicated that it might be reasonable to aim at a growth rate of five per cent in agriculture in the next five years and 8 to 10 per cent in the industrial sector. An overall growth rate of five to six per cent per annum (compound) appears practicable, according to the Approach Paper. For a five per cent growth, the average rate of domestic savings will have to be stepped up from 8 to 12 per cent. In the public sector, this would imply Rs 200 crore of additional resource mobilisation. A 6 per cent growth rate would involve Rs 250 to Rs 300 crore of additional mobilisation.

The saving capacity in the country rose from 5 to 10 per cent in the decade ended 1960-61, but went down to 8 per cent. There are two assumptions in this discussion. The task of raising the rate of savings, depends considerably on continued good monsoons and on the success of the family planning programmes. For during the Third Plan, additional tax revenues actually obtained far exceeded the target of Rs 1,170 crore; but it was neutralised by an increase in the population, reducing the per capita income to the 1960-61 level. It should also be noted that there is no choice left except to mobilise additional resources, which are

necessary even to maintain the 1968-69 level of Plan outlay.

The general lines along which additional mobilisation effort might be taken up, are indicated as follow: (1) Fiscal structure has to promote a better payments position; (2) help stabilise prices; (3) achieve self-reliance with better contribution from public sector undertakings and (4) narrow down disparities in economic status and power.

The private sector is of the view that there is no case for additional taxation. Compulsory means according to them results only in the diversion of resources from one sector to another. It is also said that Government should not attempt beyond "natural limits of growth". Savings directly available for private investment during the Fourth Plan have been estimated by a technical committee, at Rs 7,750 crore. (See Table.)

### Estimated Private Saving

|                                    | (Rupees in crore) |
|------------------------------------|-------------------|
| Non-financial corporate sector     | 1,165             |
| Commercial banks                   | 21                |
| Specialised financial institutions | 15                |
| Insurance companies                | 12                |
| Other financial institutions       | 7                 |
| Co-operatives                      | 80                |
| Households                         | 8,370             |

Mr. M. Sundara Rajan is a News Editor in All India Radio, New Delhi.

|                                                         |       |
|---------------------------------------------------------|-------|
| Total private saving :                                  | 9,670 |
| Government draft on private saving:                     | 3,650 |
| Private saving available for private investment:        | 6,020 |
| Surplus from depreciation provision in corporate sector | 910   |
| Net inflow of funds from abroad                         | 685   |
| Other sources                                           | 125   |
| Total private saving available for private investment:  | 7,740 |

While the figures may vary, the magnitudes remain more or less the same. It would appear that the private sector would be left with nearly double the share of the government in private savings. The estimated Government share is only Rs 770 crore more than the additional tax realised during the Third Plan, namely Rs 2,880 crore.

### A WAY OUT FOR PRIVATE INDUSTRY

It is the argument of the private sector that taxes have knocked out of the capital market. It would be appropriate to quote the reported view of Sir Norman Kipping, the capital market in India could recover, if firms tried to tap rural savings. In other words, private industry should reorientate itself to the new demands of the farmer.

But what is the position today? Following devaluation, the shelter market for the private sector

further protected. Profits to domestic producers are on the increase. As incomes increase, mass consumption shifts to not-so-essential consumer durables. The aim of fiscal policy is not only to get resources but facilitate structural changes in the economy. Agricultural prosperity does not mean that private industries can merely benefit from it, by continuing their present lines of production of consumption articles; it has a social obligation to help the farmer in getting the new tools to sustain the agricultural revolution.

Industrial production index is also encouraging. It was 154.96 for February 1968, 7.7 per cent more than that for 1967. With the growth in income, more and more people would come within higher income brackets. Thus while industry seems assured of adequate demand, it would be suicidal to have deficit financing, as suggested by some in the private sector, as an easy alternative to tax collection. Deficit financing is a tax on the poor and it affects the private sector itself by pushing up costs.

The additional taxes imposed this year by the Centre are expected to yield about Rs. 66 crore only, though deficit financing is of the order of Rs. 290 crore. The States have piled up a total deficit of nearly Rs 90 crore, while their additional taxes might get them just Rs. 11 crore. Thus there are comparatively more resources left in private hands.

### RURAL SAVINGS

Granting that diversion of a considerable portion of the savings has to be voluntary, the means to be adopted for netting it assumes importance. In the estimate of resources referred to earlier, the household savings is the largest chunk. The idea of floating debentures has been in the air. Any such scheme has to overcome the traditional preference for assets like gold, land, house or simply cash. In the rural areas, there is a marked tendency to invest in farm implements. Traditional means like small savings have yielded little.

An estimate prepared by the National Council for Applied Economic Research, has argued the case

for creating rural assets by private capital formation. It has pointed out that as much as Rs 400 crore worth of capital assets in rural areas can be created, if a scheme of rural public works is effectively implemented. The idea is to impress on the rural people that whatever is invested by them is converted into assets in their own area and is of direct benefit to them. Less ambitious is the scheme to impound more savings through the co-operative land development societies. They should become self-financing to an increasing extent. Otherwise, as the Approach paper suggests, we have to think of other agencies like the commercial banks. There are signs to indicate that if shares of banks are related to farm inputs like fertilisers or tools, it has a better chance of being subscribed to. The National Credit Council would have to play a crucial role in enabling commercial banks to widen their deposit base in the rural sector.

This brings us to the role of monetary policy in regulating investment in the private sector. The current phenomenon of return flow of credit may not last long as the slack season ends and new credit demands arise. If the P.L. 480 imports taper off, to that extent Indian farmers will get money from their grain sales to the Government. At present, the United States returns some of its rupee earnings as loans. This year's Budget has assumed PL 480 receipts at Rs. 274 crore. This increased money supply will be offset by the sale of grains by the Government to consumers, but only over a period of time.

Thanks to the price support policy and the bumper crop, the farmers have been receiving increased incomes. The terms of trade have shifted in their favour. The Wholesale Price Index for food articles increased from 112.5 in 1950-51 to 217.6 in 1967, or by 93.4 per cent, while for manufactures it increased from 103.3 to 167.5 or by only 62.1 per cent. The growing incomes in the rural sector have to be tapped.

### TWO AVENUES

In this context, there are two avenues for additional resources, namely water rates and electricity charges

in the rural areas. The Nijalingappa Committee on irrigation rates has suggested that 25 to 40 per cent of the additional net benefit to the farmer from irrigated crop can be recovered; where net benefit cannot be computed, the water rate should be 5 to 12 per cent of the gross income from irrigated crops. The Committee had made out a case for a compulsory water charge, whether water is drawn or not. As benefits of big irrigation projects are channelled to farmers, it is but just to make the better-off among them pay a little for it. However the recommendation is yet to be implemented.

Power generation has become quite profitable and yet its expenses are supported by general revenue except in a few cases. The Electricity Boards in the States do not generally meet even the interest charges on loans given to them. The Electricity (Supply) Act, 1948, does not provide for repayment of the loans received from the State Governments from the revenues of the Boards. The Venkataraman Committee has recommended that the rate of return on capital employed in electricity under takings should be raised to 11 per cent per annum on a phased programme. The Boards should pay the interest charges within three to five years. That was four years ago and by and large the status quo continues. Neither the States' revenues improve nor those who benefit, meet their social obligation.

### LAND REVENUE

Agricultural income-tax, which is mostly on plantations, calls for reform. The Constitution-makers have assigned everything agricultural to the States. But if the net of agricultural income-tax is cast wide, it may not fall equally on all sections of farmers. The best solution therefore is its merger with the general income-tax, as suggested by the Taxation Enquiry Committee. An attractive ratio of sharing the new tax may be offered so that the States may agree.

As for land revenue, it has become a political issue. Yet basically it is an economic proposition. As a percentage of the State tax revenue, it declined from 21 in 1951-52 to 13 in 1966-67. Several States have virtually abolished land

revenue. While the popularity of this traditional source may not be revived, the emergence of Panchayati Raj seems to offer a way out. Panchayat Samitis in States like Madras have levied a surcharge on land revenue. However, generally speaking, the local bodies have numerous functions but meagre finances. It is therefore appropriate for the States to transfer the land revenue to the panchayat. Suitable exemption may be given so that the exercise may not prove regressive. This would reduce the expenditure in the State Budgets. Resources directly raised by local authorities have to be taken into account for any meaningful discussion on resources.

Sales tax, the *Kamadhenu* of the States, needs a second look. On an average, 41 per cent of the total tax revenue is from this source to the States. But there is wide inter-State disparity, Maharashtra having 55 per cent at one end and Jammu and Kashmir, 25 per cent at the other. It would be worthwhile to enquire why certain States have lagged behind in this field, as also the oft-repeated claim that the sales tax has reached saturation point.

It would be interesting to know how the loss of revenue because of prohibition in some States would be treated for purposes of central assistance. Here again, a clear policy is called for.

## PUBLIC UNDERTAKINGS

Much criticism has been voiced against the returns from public sector undertakings. Import substitution has pushed up the costs. Inventories have piled up. Some of them suffer from surplus labour. Many reports have said that the managers of these undertakings have neither freedom nor do they get reward for initiative. Day-to-day affairs are best left to those who are on the spot. Granting that such reforms are introduced, the question still remains whether the products of the public sector would 'sell'. Either they should be readily absorbed in the economy itself or should have a good market abroad. Is the expansion of electricity schemes, for example, sufficient to take in what is or can be produced in the Heavy Electrical plants? Mining capacity for coal is said to

exceed the demand. Wagon-building has to be export-oriented, if its excess production capacity is to be utilised. Total investment in the public undertakings being Rs 2,841 crore (till the end of March 1967), the internal resources generated by them, are estimated at only about Rs 75 crore. If this were true, it is high time to fix a minimum return of 11 per cent and examine with an open mind how many of the 40 and odd concerns can hope to reach the target. If they are to earn profit and plough them back for development, the price of their products should be what the market will bear.

## FOREIGN AID

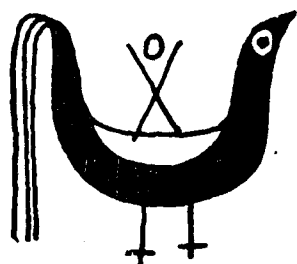
As regards resources from abroad, the foreign payments gap continues. It was Rs. 588 crore in the First Plan, Rs. 1,836 crore in the Second Plan and Rs. 2,397 crore in the Third Plan (pre-devaluation figures). While there is a clamour for allowing more private foreign capital, the rupee trade agreements have also shown of late the difficulties of balancing the trade. As suggested by the Administrative Reforms Commission, a clear policy statement on foreign collaboration is needed. As for aid prospects, the International Development Authority is virtually out of business and the U.S. Foreign Aid proposals have been reduced by their Congress. Unofficial reports say that despite last year's commitment of \$930 million of non-project aid, only 60 per cent of it has actually been disbursed. Debt servicing would absorb nearly 30 per cent of the exports. Though at the recent Washington meeting of the donor countries, \$ 100 m. for debt relief was promised, the non-project and project aid seems to be uncertain. If our exports do not increase, the target of 50 per cent cut in foreign aid may not be reached. The only way seems to be an export policy which would guarantee a reward over a period of time, enabling the producers to invest at home and build up their overseas markets. The need to supply inputs at international prices cannot be over-emphasised. Deferred payment schemes seem necessary to capture markets in the developing countries. Exporters at home may need credit

to make such offers. Basically it all depends on the individual exporter. One can only take a horse to the water but cannot make it drink!

## ECONOMY MEASURES

In the estimates of resources, one of the assumptions is that expenditure on administrative services and tax collection and the non-Plan outlay would rise only at the rate of five per cent per annum. If it is 3½ per cent, an additional amount of Rs 335 crore will become available. But that calls for very special efforts. Non-development expenditure of the States has increased from Rs 196.4 crore in 1951-52 to Rs 1,137 in 1968-69 (Estimated). It is no doubt true that provision of social amenities impose a draft on States. But it is time that amenities like hospital beds are charged, on those who can pay. One important question relates to the dearness allowance at Central rates. The more the deferred payment system is adopted, the less would be the impact on the current price level.

While presenting the Budget this year, the Union Finance Minister said, massive mobilisation of resources will hurt the economy and retard the process of growth. But with the economy turning the corner, a new strategy and approach cannot be ruled out. Large areas in the economy, which have remained outside the resource mobilisation effort, should now play their part. If only we can go off the beaten track, we could hope to tap not only more savings but achieve some of the structural changes necessary to make the economy yield more resources for investment.



# SELF-RELIANCE CALLS FOR INNOVATION

S. SUNDARAM

THE debris of India's Third Plan will soon be the base for her Fourth Plan. Like the three earlier Plans, it will also start on rickety foundations. Unreliable data, over-ambitious targets, and ill-conceived instruments will be the main pillars.

The data known or given to the Planners are the information on the natural resources, capital equipment, technical parameters on production processes, new technologies, manpower potentials and so on. Their usefulness depends on their accuracy and dependability.

But India's statistical details are technically inaccurate, lacking comprehensiveness. Many of the published indices are either obsolete or useless for long-range projections. The supply of information is also slow.

Against this background, it is no wonder, the target variables which directly concern the proposers and the executors of the Plan get distorted telescopically. Individual consumption, per capita standards, Gross National Product, and factorials of economic growth rate are a few such economic variables to suffer.

There are many sociological and economic restraints on the control of the targets by the planners and Government. For example, uncontrolled population growth is sociological, while methods of production are economic.

Other economic tools like the technologies are also beyond the control of planners, because India has no technological base. Moreover, the rate of change of every technology is so fast as to falsify assumptions on targets. Many of the advanced technological aids are also inapplicable and unsuitable for India.

What could be useful for a highly developed economic system need not be so for a technologically

backward country. The disappointing results of the technologically well-organised public enterprises, with their latest processes, bear out these conclusions. In the sophisticated mechanical surroundings, relations and Indian managerial, manpower and other skills have failed.

## Control of Variables

For rapid progress, India's planners should be able to control the instrument variables. These are tax, fiscal and monetary policies, industrial licensing processes, credit control, expenditure, external trade relations and other similar items which directly affect the national economy.

For a proper approach to the Plan, an understanding and responsible collective thinking among the planners and the Central and the State Governments are necessary. But inconsequential ideological debates, *ad nauseum*, vitiate many vital issues of the nation's economy. Narrow political prejudices are allowed to prejudge right economic idealism. The future prosperity of India will be at stake if such a negative thinking dogs all the steps from the drawing board to the field.

A disciplined and realistic control over all the variables is the first step to success. The realism should relate ambition to achievement. Cold and logical appreciation of facts should replace vague assertions and imaginary conversations.

For example, in the approach to self-reliance with speed, the Indian planners propose to build buffer stocks of the main agricultural commodities. It is to control production and price fluctuations. The idea is very laudable indeed.

But on the field, primarily excel-

Mr. S. Sundaram is a scientist of F.A.C.T., Alwaye, Kerala.

its practical achievement. They should be organised scientifically, insect - weather - and pilfer - proof. Here, some of India's recent experiences have been unhappy. Enormous quantities of food products had been condemned to waste due to faulty storage.

Countrywide, strategically-located bins will aid the quick material transit to needy places. The storage could be computerised for receipt, issue and despatch of the commodities. With correct data, the storable choice of the commodity mix could be specified. An identification of the weak points, instead of a blanket application of the principle of stock buffering to all perishable agricultural commodities, could be useful. The past demand and supply of the various farm produce can be the guide for the quality, quantity and price fluctuations. A judicious selection of practicable alternatives will help a great deal.

We have also to remember the effect of artificial and speculative causes on prices. In India the demand sometimes far exceeds supply due to the excessive population. Hoarders often exploit the situation, upsetting prices. It is necessary to study and define the scarcity generated by them.

Self-reliance is a noble major objective. Unless India develops her own resources to strengthen her basic technologies, it would be just a futile hope. In a world rocked by technological explosions, it is wise to know that the contribution of India's own scientists and technologists to the increase of her GNP is nil. A total revamping of all the research areas to link the results with the GNP is the first lesson in self-reliance.

A beginning can be made on the technologies already available in India. There is sufficient technological information in the different industries, purchased through foreign know-how. A major part of it is old, while the balance is current. In either area Indians can innovate. Continuous adaptation and modification can be done to suit the future growth and development.

## Innovation

Innovation is nothing but the projection of new combinations of

available resources. It is also the alteration of the economic environment and discovery of new relationships among existing factors through new problem-solving methods.

A few instances could be steel-making by a cheaper process, winning of sulphur from low grade pyritiferous ores, and making fertilisers through a better combination of resources.

Innovation is a necessity not only for the survival of any economic enterprise, but it is also a tonic against decay and staleness.

India has many good scientists, production and work-study engineers and also specialists in other areas. But the need is great for industrial designers, market researchers, and product development specialists. In every field there should be creative innovators and not theorists to chart out new paths for practical achievement. The preference should be for result-oriented individuals over abstract academicians.

This would lead us into the psychological and social environs of education, training and manpower planning. Are India's present educational and vocational methods adequate and satisfactory? The answer is, 'no'. Is a mere emphasis on the three R's enough? Probably not. Education can be made the pre-training for creativity. But the process should begin sufficiently early.

Creativity is not a new phenomenon. It had been the centre of Indian philosophical systems for centuries. But many confusing definitions had obscured it. Recent ideas have only given it a more objective and realistic look. It could be tried in all areas of India's national development.

For instance, Indian chemical industries depend a lot on imported sulphur. It is the basic raw material for sulphuric acid. Apart from the foreign exchange needed to buy it, demands on it from many countries have made it scarce. Are there not alternate materials to replace it? Secondly, are all the present uses of sulphur as highly efficient and productive as possible? The respective answers could be 'yes' and 'no'.

There is sufficient sulphur in India in the form of gypsum and

pyrites. There are also a few refineries and metallurgical ovens in the country throwing out sulphur in the waste gases. These sources can be tapped profitably.

Sulphur can be made from pyrites by many well-known processes. A few of them accept a broad variety of low grade ores to give sulphur, sulphur compounds, sponge iron and precious metals.

Similarly the use of gypsum to make sulphuric acid and cement is also well-known. Some industries abroad reduce gypsum with clay and coke to sulphur (as acid) and cement clinker. As the energy needs of the process were very high, it was unpopular till now.

Indian scientists can innovate on a low cost route with cheaper reducers. Indeed, there is also a method to reduce sulphate with bacteria. The principle is to break the sulphate of the gypsum bacterially to hydrogen sulphide to make sulphur. This is a fruitful area of

creative research for India's biologists.

The refinery off-gases and industrial plant stacks can also be made useful sources of sulphur. The National Chemical Laboratory of Poona can work on it with the refineries of Bombay, initially. Subsequently, the research can cover also the other industries of the country. The refineries—public and private—could process high sulphur crudes only.

Similar creative enquiries can widen the required technologies to help India towards self-sufficiency.

Motivation of every Indian citizen likewise for creativity will help the country towards successful achievements.

Another prescription for success is an integrated systems approach to the theme of self-reliance in national development.

If it is otherwise, God forbid the bleak prospects of the failure of another Plan!

## COST BENEFIT TECHNIQUE IS THE NEED OF THE HOUR

GOPAL BHARGAVA

**P**RICES have to be stabilised, inflation checked and recession abated if the Fourth Plan is to lead the national economy towards self-sustained growth. It has to have directional approach to change the structural pattern of the traditional agricultural sector. Stress has to be laid on the need to educate the farmer to make use of co-operative services, which, in turn, should take up all the productive activities that build up the village economy. Urban economy has to be built on selective industrial activities. This can increase the rapid rate of growth of the national economy. The system of national education should have practical implication for the various economic activities.

The Fourth Plan should devise

*Mr. Gopala Bhargava is in the Town and Country Planning Organisation of the Government of India*

a scheme of social training, to improve the moral standards of the people, without which the Plan cannot achieve its objectives. If there is hoarding and black marketing the Fourth Plan targets cannot be achieved. There has got to be a device by which the central authority responsible for Plan execution can check the malpractices, while allocating huge financial resources for building the various projects.

The Fourth Plan should also establish a relationship between marginal net investment and marginal production. It can be based on the workability of proportionate return from the investment. The volume of investment in a national project has to be evaluated from the initial Plan year with respect to that of the second year. Then the judgment of its intensity would be based on increased marginal production.

the Fourth Plan should adopt can be illustrated by the following example. Say, a river valley project has a total investment of one crore rupees. Then its productive uses should yield at least 60 per cent of the total investment in the first year by mobilising the agro-industrial sector to the fullest. In the second year, the additional marginal investment of, say, Rs. 25 lakh should yield an additional marginal production of 80 per cent of the total investment. This is the best economical proposition to be adopted in the Fourth Plan, while allocating financial investible resources. The emphasis should be on making it a production-oriented Plan in reality.

Pumping too much money from the people to spend on economic activities in the Fourth Plan will only add to the inflation in cost, and send the rising prices and higher wages chasing each other. The Fourth Plan should, in fact, try to check inflation and the forces of recession, without disturbing the growth of the national economy.

The effective implementation of the Plan will require a strong admis-

which will check malpractices in the flow of money and monetary leakages. The distributive authority should have a programme of distributing the resources on an appropriate scale in terms of raw material, manpower as well as scientific and technological know-how.

A regional approach should be adopted in planning national projects. It has been observed in many cases that the maximum social benefits are not achieved mainly because planning is confined to individual States. The State projects, in terms of cost and derived benefits, are not conceived in terms of benefits to the adjoining States. As a result, the cost optimal approach cannot spread over an area vast enough to have an impact of its benefits.

If a project comes up in Bihar, it should also benefit the people of, say, Uttar Pradesh, provided it has the potential. In India, the locations of projects are selected not on the basis of their suitability, but very often for reasons of better bargaining capacity of a Chief Minister with the Union Government.

view to minimising cost and maximising social benefits. This is feasible only when the different States have an integrated approach to planning. Resources should move freely from one State to another, and the production centres should have good transport facilities. There should be joint consultations between administrative bodies of the different States for developing the resources for the projects.

A project in one State can be a medium of output for a project in another State. Or the input of a project in one State can be the output for another State. This interdependence and inter-relationship can have justification for locating the projects in different States so that a larger population can share the advantages of their benefits.

It is hoped that by such a process, the capital absorption capacity will multiply its effects for the creation of adequate infrastructural facilities in terms of socio-economic overheads to accelerate the growth rate of the economy. The need of the hour is to apply the cost benefit technique to the planning of projects.

THIS  
THEY  
THINK

YOJANA invited readers to express their views on the "Approach to the Fourth Five Year Plan". The response has been encouraging, which has enabled us to present this feature for the readers, by the readers. This is the third instalment of the readers' comments.

### Towards Palmy Days

**T**HE Approach has been drawn up, keeping in view the experiences during the last three Plans. The entirely new approach that has been given to the Fourth Plan speaks volumes for India's hope and advance towards palmy days. But the difficulty lies in how the whole gamut of the Plan programmes can be implemented successfully. Since ours is a mixed economy, even a small shortcoming in one sector may become a major stumbling block and affect other sectors also.

So the achievement of the Plan will depend on the work of every officer, every minister and every individual who is directly or indirectly connected with the implementation of the Plan. The people will also have to play their part if they are to enjoy the fruits of planning.

Finally, to call a spade a spade, the Fourth Plan is the first for which a great deal of advance thinking on the various socio-economic problems by the Planning Commission is being done. Nevertheless, it may have its own drawbacks which we will know when the Plan is actually implemented.

Madras

NISHATH AHMED

### 'Will' without 'How'

**H**ow delay in making a declaration sometimes causes genuine doubt before and gross disappointment after it is announced is well borne out by the "Approach". It is a pity that after so much anxious waiting and so much conscientious and costly deliberations, this lip-service 'mini-plan' document has been produced and made public. The sacred 'paper' hardly satisfies anyone with its numberless 'wills', without their 'hows'.

The planners presently engaged in the preparation of the blue-print

of the Fourth Plan on which depends the destiny of the nation will do well if they elaborately explain the 'hows' in the matter of solving the following first three problems: (i) Food problem; (ii) Population Problem; and (iii) Unemployment problem.

Mere small statements on these serious problems and on their solutions will not do; solid and practicable suggestions are called for. This will cement confidence of the people in planning.

Delhi (Mrs) BIMLESH CHAUDHARY

## Village as Unit

THE common man expects from the Plan (1) food and cloth at cheap price, (2) shelter, (3) employment. The first three Plans failed to provide these adequately. The result is that the nation is burdened with a back-breaking debt. The reason for this is that agriculture, which is the mainstay of our economy, could not make the desired progress. The fulcrum of development should be the village, and its economy. Every village should be provided with (1) a gram panchayat, (2) a co-operative bank, (3) a co-operative consumers' store, (4) a school, (5) a dispensary, (6) water supply, drainage and electricity, (7) roads and bridges linking the village with towns, and (8) ancillary industries such as dairy, poultry and animal husbandry on co-operative basis.

Self-reliance and self-dependence should be the watch-words while drawing the Fourth Plan. The Plan should also make efforts to control the growth of population and give more stress on small savings.

Big projects involving foreign aid and foreign exchange would only lead the nation to bankruptcy.

Baroda D.B. DEWASKAR

## Agricultural Organisation

THE drums of the "Approach" now beating must not be feeble

along with the progress of the execution like the sad experience of the previous Plans. The solution of the explosive problems of agriculture and rural unemployment has, no doubt, been well phrased. Yet it may be pointed out that the planners have not paid attention to the importance of organising agricultural industries and smithy associations, along with other like trades with a view to increasing agricultural production and reducing the burden of unemployment.

If smithy operations are organised and used for the production of small agricultural implements, developed through research, substituting the existing age-old ones, every village can have the benefit of improved implements at cheaper prices.

Dairying should be encouraged as side business in villages by providing grazing grounds and balanced fodder.

Steps should be taken to plough back profits by big farmers. The introduction of retention price in respect of some major cash crops and foodgrains and nationalisation of wholesale trade of such crops are two of the possible steps.

Engineering possibility and financial feasibility of linking the irrigation canals and reservoirs through river beds and new canals should be studied to mitigate the problem of regional droughts and floods.

The bureaucratic set-up has proved inadequate in providing agricultural inputs in the rural areas. A new more efficient machinery will have to be evolved.

UTPALENDU ROY CHOWDHURY  
Uttarpara (W.B.)

## First to Consult People

ONE striking feature of the 'Approach' is that for the first time the Planning Commission is really attempting to make planning a national exercise—leaders of all major political parties are being consulted and even the man in the street is being encouraged to give his views to help the formulation of the Plan. This is a happy augury

because only with public participation can any planning be a success, and discussion is the first step towards participation.

'Ambitious' is the word to describe the Fourth Plan blueprint we have before us. It aims at a robust annual (compound) growth rate of 5-6 per cent to pull our economy out of the trough it has fallen into. Without proper implementation, even the best of plans fail; but in order to succeed, the blueprint has to be balanced with the country's needs. The "Approach" is indeed a balanced and adequate document. It covers all the aspects of our economic life. First priority deservedly goes to agriculture and next to industry.

Additional taxation has been suggested as a way to raise more resources to finance the Fourth Plan. This is politically unrealistic and unfair to an already overburdened public. Large-scale public borrowing, especially by introducing attractive Government lotteries will be more feasible.

Extending the scope and functions of agricultural co-operatives, as the 'Approach' recommends, would be useless without first cleansing these institutions thoroughly of corruption and political manoeuvrings.

Finally, to talk of providing universal higher education and also maintaining quality is contradictory. University education should be only for those with aptitude and, to ensure equity, aptitude must be judged irrespective of socio-economic status.

Delhi VINOD CHOWDHURY

## CORRECTION

Mr. G. Viswanathan Pillai, whose article on 'Shortage of Subsidiary Foods' appeared in the Yojana issue dated July 21, 1968, is a Research Officer in the State Planning Board of Kerala. He is not a Member of the Board, as mentioned below the article.

# Unemployment among Engineers

RAM K. VEPA

THE problem of providing gainful employment for the large number of engineering personnel turned out by colleges and polytechnics in the country has attracted wide attention recently. The students of engineering colleges in many parts of India went on strike for some time and various Government pronouncements both at the Centre and at the State levels were made to find solution to this problem. During my informal discussions with the student representatives of the engineering colleges in Andhra Pradesh, I had the occasion to notice the sense of apprehension which they seemed to have for their future. It is, therefore, of some importance for all those interested in the future growth of this country to pause and ponder as to why this problem has arisen and the way of solving it.

In sheer statistics, the problem is of considerable magnitude. It is estimated that there are today about 50,000 unemployed persons who have been trained in the engineering colleges and the polytechnics. Out of these, about 20,000 are said to be degree holders and the rest possess diplomas awarded by polytechnics. In fact, the entire output of these academic institutions in the current year is said to be facing the bleak prospect of unemployment, while 50 per cent of those turned out last year are said to be without a job. In Andhra Pradesh alone, about 10,400 persons are seeking employment of which nearly a third are graduates in engineering. It is a paradox that at a time when the country is embarking on a massive development programme, there should be no work for people who have been trained at considerable cost in high grade technical institutions.

The reasons for this unfortunate state of affairs are, however, fairly

clear. The recession in the engineering industry, which began almost four years ago, has gathered momentum due to two successive years of poor harvest and has made it necessary for both the public and private sector establishments to restrict their production. The fall in the public demand for consumer products which, in turn, is due to the poor purchasing power of the agricultural sector, has affected the machine building industry which supplies equipment for the consumer industry. The curtailment of orders by Railways and other Government departments as well as the reduction in the construction programmes of the Government have brought to a halt the industrial production in a number of allied fields. This sudden contraction of demand both amongst the public and in the Government has reduced considerably the job opportunities available to engineering graduates and diploma holders in the country.

Various remedies are being suggested to solve this problem. There has been an increasingly insistent demand for greater employment of local personnel in industrial establishments both in the public and private sectors. In some States this demand has taken a political turn in the form of organisations such as the Shiv Sena in Maharashtra and the Lachit Sena in Assam. In many other States there is an increasing clamour that only local personnel ought to be appointed to various posts in the industry existing in those States. While it is understandable that a preference should be given to persons drawn from that area, it would be somewhat suicidal to insist on a rigid application of the

Mr Ram K. Vepa is Managing Director of the Industrial Development Corporation, Andhra Pradesh.

About 50,000 engineers are estimated to be unemployed today and the number may increase in the coming years.

The reason is the recession in industry that began about four years ago.

The remedies that have been suggested may not pay in the long run—reduction in admission to engineering institutions may prove harmful to future industries; and the creation of an engineers' pool may not be workable.

The suggestions made in this article are :

1. Self-employment by engineers in technical services which are very much needed by the public.
2. Linking industry with technical education so that an engineer can have practical experience along with academic qualification.
3. Provision of incentives for technical entrepreneurs.
4. A short-term "Brain Export" to the developing countries of Asia, Africa and Latin America.

principle irrespective of the merits of the individuals. The Union Government has laid down a balanced policy of recruitment for their public sector undertakings wherein it has been stated that local personnel should be employed in Class III and Class IV posts while for higher posts they should be preferred wherever possible. Apart from its impact on the problem of National Integration, it is obviously unrealistic and undesirable to go much beyond this principle in recruiting persons to an enterprise whose main motivations are commercial and which, in the ultimate analysis, will be judged by the surplus which it can generate either for the shareholders or for the community.

Another solution that has been suggested is to restrict the intake of persons into the engineering colleges and polytechnics. The Union Government has advised the State Governments to cut down the admissions into these institutions by as much as 30 per cent. While this might be a partial solution to the problem, it must be realised that such a reduction in the intake is unlikely to make any impact on the problem of finding jobs for unemployed engineers in the immediate future. The gestation period for producing an engineering graduate extends over a period of four to five years and any restriction in the intake this year can have the impact only around 1973. Unless a careful estimate is made of the personnel required at that time (which in turn depends on a realistic forecast of the growth rate of the economy), it would obviously be unwise to restrict the admissions only on account of current difficulties which may be temporary. Further the problem of providing suitable professional avenues for the large group of high school students has also to be taken into account while restricting admissions into professional colleges.

### Pool of Engineers

A third suggestion that has been made is to establish a pool for engineers in the same manner as has been done for scientists by the Council of Scientific and Industrial Research. It has been suggested that a minimum salary of Rs. 300

per month for degree holders and Rs. 200 per month for diploma holders may be provided for some time before these persons can be absorbed in industry.

The experience of the scientists, pool, however, has been unfortunate; it is sad, but true, that a number of persons have tended to look upon their participation in the pool as a job in itself and have continued there for many years. A restriction has, therefore, been placed on the duration of such participation. In purely monetary terms, the expenditure involved is quite large and to maintain such a pool the country will have to spend Rs. 15 crore every year merely in the form of salary to the pool members. It is also doubtful whether such a scheme will not encourage an attitude of dependence on Government. It may thus be both expensive and undesirable to operate a pool for engineers, as is being done for scientists.

### Ties with Industry

The pattern of employment in most developed countries is largely of self-employment, where a technically trained person sets up either a service or a manufacturing unit which provides him with modest returns and the community with a useful service. Unfortunately in India, the trend has so far been to look to the Government technical departments as the mainstay for providing employment, though in recent years the private sector industry has provided a sizeable portion of such jobs. The technicians have no aptitude to set up service organisations by themselves which provide a much needed service to the community. An automobile engineer, for instance, could very well open a repairing workshop. There is also a growing need in most urban areas for reliable service facilities for domestic appliances, radios and similar equipment. With a little imagination and initiative, there are considerable opportunities in the country for teams of professionally trained people to set up services which would be welcomed by the public and industries.

This, however, requires self-confidence on the part of the engineers which is not always fostered by our

educational institutions. The curricula for engineering subjects, both at the college and the polytechnic levels, tends to be largely academic and has inadequate industrial background. This may perhaps be due to the fact that the staff in these institutions themselves lack, in most cases, an industrial experience. It, therefore, seems necessary for a long-term solution of the problem to reorient the curricula to impart to students a greater awareness of the needs of the industry.

It should be possible for engineering colleges to collaborate with industry in providing apprenticeship training for engineering graduates during the summer months which are at present largely wasted. In fact at the Indian Institute of Science, Bangalore, (from where I graduated), it was the practice to spend every summer in an industrial plant, and such apprenticeship was a pre-requisite for the award of the degree. Further, a final year student in the engineering college or a polytechnic should be required to work out a project which he should be prepared to implement, if necessary, when he passes out of the institution. This will enable the student both to get a realistic feel of the industrial problems of the country as well as to equip himself with a ready-made scheme which could be utilised by him after graduation. For this purpose, it is necessary that professors in engineering colleges and polytechnics work as consultants to industry. It is a common practice abroad that a professor who has some standing has extensive contacts with industry and it is through them that he is able to offer useful job opportunities to his students. In India, however, contacts between industry and professional institutions are limited and few teachers work for industry.

The Union and the State Governments as well as organisations like the State Bank of India, the Small Industries Service Institution, the National Small Industries Corporation, and the various Development Corporations at the State level are operating numerous schemes of assistance to small industries. But technical entrepreneurs do not take full advantage of

turn to PAGE 13

# Management of Co-operatives

C. DINESH

The set-back in the co-operative movement is attributed to the failures of management.

The rapid expansion of co-operative activity emphasises the imperative need for scientific management.

The existing pattern of training is administration-oriented, and not management-oriented, and departmental officials dominate the training courses.

The system of training and recruiting co-operative personnel needs overhauling.

It is only recently that the co-operatives have realised the need for developing efficient management in order to build up co-operative enterprise on sound business lines. Management in the context of the co-operative sector involves the incorporation of co-operative principles, with those of business enterprise. No serious effort has so far been made to evolve a scientific method of co-operative management embodying both these principles. Co-operative experts at best have tried to evolve new principles of co-operation, without trying to study the extent to which these principles are in keeping with or against the tenets of good business management.

Though the setbacks of co-operative movement in different fields have been attributed to the failures of management, no attempt has so far been made to study this problem scientifically so that co-operative management at different levels may be placed on sound footing. To begin with, we have not yet tried to assess the magnitude of managerial talent required at different levels of co-operative structure for the present and for years to come. An assessment of the existing staffing

pattern has to be made in order to assess future requirements. The rapid expansion of wholesale consumer stores, departmental stores and their operations during the last few years bears ample testimony to the imperative need for scientific management.

### Volume of Business

The volume of business in credit and non-credit sectors of the co-operative movement reveals that the trend is towards increasing the volume of business in all types of co-operative activity. In credit societies the membership, working capital and advances have shown an increasing trend, but, at the same time, increase in the amount of overdues is also evident. In fact, overdues have increased more rapidly between 1964 and 1966. Also, though the number of societies incurring losses has slightly declined, the amount of losses has increased. At the same time, the number of societies earning profits has declined, but the amount of profits has increased. All available data

Mr C. Dinesh works in the Research Wing of Vaikunth Mehta National Institute of Co-operative Management, Poona.

clearly shows that working conditions of the co-operative societies have continued to deteriorate.

Though the lapses in management and administration are said to be responsible for the failures of the co-operative movement, due attention has not been paid to implement the schemes and programmes for recruitment and training of managerial personnel, which alone can help to overcome its shortcomings in this direction. Though the question of caderisation and recruitment is being discussed at different levels, no concrete schemes have so far been put in operation, and progress in this direction has been negligible. For instance, up to June last year, 965 senior officers (616 departmental and 349 institutional) were trained. The figure for intermediate officers for the same period was 9,074 (7,902 departmental and 1,172 institutional) and for junior officers it was 62,431 (21,885 departmental, 30,391 institutional, and another 10,155 unemployed). In comparison, the estimated requirement of institutional officers required to be trained as on 30.6.65 was 8,009 senior officers, 8,791 intermediate officers and 1,92,858 junior level officers.

Another factor that should be taken into account is that, when the need is to train institutional officers who are responsible for managing co-operative institutions, departmental officials dominate the training courses, both at senior and intermediate levels. The data available lead to the following conclusions: Firstly, these courses are not management-oriented, but administration-oriented; secondly, the institutions may not be interested in sending their personnel for training, either because the courses are not suitable for meeting their requirement or they may not be able to meet the cost of training. As for the junior level training courses, since the States are involved financially there is a certain

amount of compulsion on officials as well as institutions to send candidates for the training courses. Even there, the ratio of trained departmental personnel to personnel required to be trained is very much higher than that from the institutions.

### Departmentalisation

Though it is true that many of the co-operative institutions in all the States are managed by departmental officials, their tenure of service has always been temporary. This is not conducive to the creation of any permanent interest in the institutions. If the institutions do not work well or, if the officials are not interested in working in a particular institution, they can always go back to their department. In fact, too much of departmental initiative, management and administration has come in the way of building up an efficient managerial cadre in the co-operative sector. This is evident from the fact that most of the better managed institutions in all the States are manned by private managers.

It is a strange paradox that, while the quality of management is deteriorating, the cost of management seems to be increasing rapidly. All co-operative institutions put together spent over Rs 57 crore on management in 1964-65, and in 1965-66 credit institutions alone had spent over Rs 30.4 crore, about 5 crore more than the previous year. The highest increase was in the primary agricultural credit societies where there had been more mismanagement and mounting overdues.

### Problem of Recruitment

It is obvious that the present state of affairs in the co-operative sector reflects poor management in terms of the quality of personnel, which is due to unplanned and unco-ordinated training programmes. The primary reason for the right type of personnel not going into the co-operative sector is that there are not many incentives. Secondly, there is no security of service. The fate of an employee depends very much on the whims and fancies of the Chairman and members of the Managing Committee, and not on

his efficiency. Thirdly, our co-operative leadership (board of directors) has failed to realise the importance of efficient management in the working of an institution.

There are several ways in which the situation can be remedied, and efficient workers attracted to join the co-operative sector at various levels. Firstly, the co-operative sector may establish Co-operative Service Commissions at national, State and district levels to recruit suitable personnel. Secondly, the State Governments may compel co-operative institutions to enforce certain service conditions for their employees by enacting a Co-operative Services Act, similar to the Factory Act which applies to manufacturing units. Unless the authorities concerned are prepared to take certain bold steps in this direction, the working efficiency of the co-operative sector will not improve.

### Training Programme

Training programme in the co-operative sector is more oriented towards training departmental officials than managers of different institutions. For instance, in the senior officers course, the participants are district and State level officers of the Co-operative Department and institutions which have served at least for 10-15 years in the field. The syllabus for them includes the organisation of different types of societies and their working, the history of the co-operative movement, co-operative law, etc. One does not know how far this kind of training would improve their efficiency. Besides, this type of training has no bearing on their work, nor is it taken into account for promotion. At the State level centres, though book keeping, accountancy, audit, etc. are being taught, it is not clear how far this knowledge is being utilised by the departmental officials. On the other hand, institutional officials already know these things very well.

### Socio-Political Influence

It is an accepted fact that the main problems of the co-operative sector have emerged out of social, personal and political influences which determine the policies and

operations of co-operative institutions. These influences vary in different States and regions. There is a specific relationship between the working of a co-operative society and the socio-political situations prevailing in a given area. Unless these relationships are properly understood, no co-operative society can develop in the initial stages. While teaching the more fundamental things, the influence of socio-political situations on the working of co-operative institutions should also be taught. These relationships are not casual and sporadic. There is a scientific relationship between the socio-political structure of a community and the prevailing economic system. Why certain communities and regions are successful in business enterprise and others are not, is a factor to be analysed, particularly in relation to the co-operative sector.

The structure of the co-operative system will have to emerge out of a study of the functional relationship between social, political and economic sub-systems operating in a given society. All these three sub-systems function only in relation to the other two, and not independently. We will have to evolve the principles of co-operative business not by trying to incorporate the co-operative ideology with that of the principles of business enterprise, but by developing it as a separate system.

The socio-political influences, which are more clearly observable at the primary level, can be tackled more easily if properly understood. But at the higher levels they operate in a more subtle way. A plan to deal with these situations can be devised only if one knows the nature and character of the administrative system prevailing in a region. The more honest and impartial the administration, the more effectively can it deal with the socio-political influences. Otherwise, the problem will involve changing the basic character of the people at large.

### The Future

A programme to train managerial personnel at the apex, central and primary levels should be co-ordinated with the recruitment of

managers at different levels. Impartial and qualitative recruitment of staff and regulated service conditions will have to be enforced by law. While recruiting junior level personnel, mainly secretaries of primary societies, we have to take into account the stage of development of the co-operative movement in the area. Where the movement is well developed, qualitative factors may predominate in the selection but, even there, personal factors like caste and the status of recruits cannot be ignored. In areas where the movement is not so developed, personal factors should invariably be taken into account in the matter of selection. If the society is organised by the people themselves, the problem becomes simple. In an undeveloped village a man from a priestly caste will be generally accepted by all the groups. If such a person is not available, selection may be made from the dominant caste which actually guides the social and economic life of the area. In making a selection, the help of local leadership should be sought.

Rural leadership has two faces. One is external, which keeps contact with the outside world, like big landlords and political leaders, and the other, internal, which guides the social life of the community by virtue of its age, experience, status and wisdom.

In the interest of the co-operative sector, no departmental official should work as manager or secretary of a co-operative institution beyond a specified period, which should not exceed three years. Every district should have a school to train secretaries of primary societies. But, in case of intermediate and senior managerial personnel, State and national federations of the respective business institutions should be entrusted with the training of their cadres and these institutions may be located at each State headquarters. This would involve the institutions in the training programme, which is so important.

State Governments may make arrangements to train their own officials or they may send the officials to these training institutions. At the national level, there should be an apex institution to guide and co-ordinate the training programme

in the country and to conduct research in different fields of co-operation. These institutions at different levels should be run, as far as possible, by the co-operative sector. The national apex institute, in particular, should have experts in different branches of management, co-operation and sociology, and it should be a non-governmental agency. There should be a great deal of flexibility in its working, and it should plan the syllabus and the training programme on the basis of research conducted in different States and in consultation with the State institutions.

The financial implications of a training programme run and operated by the co-operative sector

will be within the capacity of the co-operatives. In 1964-65, the total cost of management incurred by all the co-operative institutions in the country was over Rs 57 crore, which must be much more today. If only 2 per cent of this is set aside for the training programme, more than a crore of rupees will be at the disposal of the co-operative sector, which will have enough resources to finance the programme. The State and Central Governments can also lend a helping hand. National, State and regional level training institutions are already there. It is only a question of reorganising them in a proper manner to meet the requirements of the co-operative sector.

## UNEMPLOYMENT OF ENGINEERS

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these schemes. The State Bank of India has recently formulated a scheme to supply the entire capital for projects costing less than Rs 1 lakh and to be managed by technically trained young men. But the response to this scheme has been unsatisfactory in the States like Andhra Pradesh where such entrepreneurship has not yet developed on any significant scale. It should be the responsibility of the educational institutions to get full details of these schemes and to ensure that students passing out of the colleges are aware of them so that they can take advantage of them. A more lively contact should be maintained with various organisations which can help young engineers to take to industry.

### Brain Export

On a long-term basis, one of the solutions to the problem of unemployment is to encourage a policy of "brain export" to various developing countries in Asia, Africa and Latin America. It is a fact that India's academic institutions are today turning out far too many people for its industry to absorb. It would not be a bad idea if some of them are actively encouraged to go to developing countries where they could serve India better by earning valuable foreign exchange as well as by stimulating interest in

Indian products. There is acute labour shortage in many of these countries and it is possible for the Government of India to work out bilateral agreements with such countries so that surplus skilled labour in this country can be sent abroad for some years.

Today in India well qualified and enthusiastic young men have to work on meagre salaries in an environment which is not congenial for effort and initiative. It may perhaps be desirable at least for the next five or ten years before the economy of the country picks up adequately to absorb these persons that they are helped to gain experience in other countries so that they might return to India later better qualified to serve her. It is in this manner that the industrial growth of Italy has taken place after the Second World War, largely through the training which the German industry offered to skilled Italians.

The problem of providing useful employment to technically skilled persons has therefore to be solved at various levels—through governmental policies, by academic institutions and in the industry. It needs a co-ordinated effort on the part of these three sectors, along with a pragmatic and flexible policy of finding jobs for jobless.

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## Teachers Plan For Small Families

SANTOSH KUMAR AGARWAL

THE Demographic Research Centre of Lucknow University recently conducted a survey to study the attitude and practice among university teachers as regards family planning. The teachers of Lucknow University were selected for this study.

For the purpose of the study, all the 335 teachers, belonging to different disciplines, were classified into three categories, namely professors, readers and lecturers. Then, a 10 per cent proportionate stratified sample was drawn. The total sample, thus, came to 33, of which 2 cases declined to report and so the effective sample was 31 persons. Since all the cases belonged to the higher income group (Rs 400 and above per month), income variable was ignored.

The minimum age in the sample was 25 years and the maximum 59 years. Thus all the relevant age groups were represented. About four-fifths of the respondents were in the age group of 25-50 years.

As regards sex distribution, about 13 per cent were women, 9.7 per cent of whom were married, their ages being between 23 and 42 years. In the total sample, 24 persons were married. The wives of 54.2 per cent were graduates and above, 20.8 per cent of the wives had studied up to 'Junior High School' stage and 25 per cent were educated up to Intermediate.

The number of children in each family varied from no child to 5 children. About 37.5 per cent, out of the 24 married respondents, had 3 children each; 25 per cent had two children; 8.3 per cent had 4 children; and 4.2 per cent had 5 children. Among the rest, the proportions of those with one child and those with no child were equal.

### Number of Children

A question regarding the ideal number of children that a couple should have was put to all the respondents, irrespective of their marital status. This question has much significance in the light of the fact that one of the factors influencing fertility is the desire for children. In fact, no family planning is possible unless people are able to decide what number of children is ideal for them.

The data collected show that every couple desires to have at least two children; but 56.7 per cent out of the 30 did not want to exceed

Mr S.K. Agarwal is a research worker in the Demographic Research Centre, Department of Economics, Lucknow University.

- All teachers were in favour of family planning.
- 79 per cent of the married teachers practised birth control methods, and 17 per cent of the rest did not yet need it.
- 17 per cent of the teachers reported instances of failure of contraceptives.
- 50 per cent of the teachers favoured legalisation of abortion.
- Most of the teachers wanted sterilisation to be made compulsory.

this limit, while 36.7 per cent were in favour of three children. Only 6.6 per cent desired four children. This fixation of ceiling on children could have been influenced by the huge boards displayed everywhere with the appeal "two or three children; that's all". As regards sex distribution among children, some of the respondents suggested that there should not be any such condition to have at least one son and one daughter. If any parents gave birth to a child beyond the prescribed limit, they should be dealt with severely.

All respondents were in favour of family planning; but the reasons for their approval differed. 80 per cent of them said that a limited number of children enables the parents to bestow better care on the upbringing of children. For 53 per cent, the reason was higher standard of living, and for 33 per cent, to ensure better health. Other reasons advocated were higher mobility of the family, checking the growth of population, and freedom from all responsibilities towards children by the time of retirement. The last reason stated by 3.3 per cent respondents is significant in the context of the demands for raising

## Findings of a Survey in Lucknow University

the age of marriage and reducing the age of retirement. Generally the young people do not wish to get married until they are economically settled, and this automatically raises their age at marriage. If the age of retirement is reduced, people would like to marry at an early age and not adopt family planning methods in the beginning of their married life. The question of early retirement should, therefore, be considered in the context of the policy regarding fertility control.

### Preventive Measures

About 79 per cent of the married respondents reported that they were practising family planning methods in one form or the other. Some of them practised traditional methods like self-control, abstinence and coitus-interruption. About 4 per cent used honey as a contraceptive. Among preventive methods, condom was more popular, accounting for 37 per cent. Next came oral and intra-uterine tablets, jellies, check-pessary and vasectomy.

However, 8.3 per cent of the married respondents reported difficulties in the use of condom and abstinence. The former was not handy while the latter generally created mental imbalance. About 17 per cent of the married respondents reported instances of failure, particularly in respect of the safe period, oral tablets, condoms and check-pessary.

As regards the reasons for the 21 per cent respondents who did not practise family planning, in spite of their approval of the family planning programme, about 8.3 per cent reported that there was a proper spacing between their children, 4.2 per cent had no child, and another 4.2 per cent desired one more child. The rest of the respondents disclosed that proper facilities were not available to them.

While discussing the legalisation of abortion as a means of limiting the size of family, about 48 per cent respondents favoured such a legislation, and about 52 per cent were against it. According to 33.3 per cent of the respondents, it may encourage immorality, corruption and social evils; 18.7 per cent respondents pointed out the shortage of expert surgeons and the danger to the

woman's life if abortion was performed by a quack or an inexperienced doctor. Some respondents apprehended that women who had undergone abortions gave birth to weaker children subsequently. However, all agreed that abortion should be allowed only for reasons of health of the mother or of the unborn child, or when pregnancy resulted from rape. A respondent reported that once his wife had conceived in spite of regular doses of oral tablets and wanted to undergo an abortion operation, but could not get the facilities. Consequently, he went to a private doctor who demanded heavy fees.

As regards sterilisation, almost all the respondents favoured it, some with reservations. It was suggested that sterilisation should be made universal, irrespective of class, caste, creed and income, and discretionary powers should be given to the doctors to exempt such cases where health does not permit or the couple have children of one sex only. One of the respondents suggested that only the male should be sterilised. The main consideration for sterilisation should be the number of children alive at the time of sterilisation, and not the age of the couple or spacing between the children.

It may be concluded that, irrespective of class, caste and income, every respondent liked to have a small family. For this, along with the other objectives, they accepted the family planning programme. However, only 79 per cent of the married respondents were practising family planning methods. Condom and self-control were the most popular among the methods. Failures in the efficacy of the methods had been experienced by 17 per cent, which was a very high percentage. About 4.2 per cent of the married respondents put forward their lack of proper knowledge as one of the reasons for not practising family planning in spite of their keen desire to adopt it. Though nearly half of the respondents were in favour of legalising abortion, they were apprehensive of its misuse by unmarried and immoral women. Almost all the respondents favoured compulsory sterilisation.

Every respondent was doubtful about the effectiveness of the con-

ceptives and desired that these methods should be in accordance with our culture, traditions, aspirations, and spiritual ideals which were entirely different from those of the Western societies. The respondents also felt that proper facilities for medical care and follow-up should be provided specially in the cases of loop, sterilisation and abortion.

### TRAINING FAMILY PLANNING WORKERS

A number of steps have been taken by the Union Government to create training facilities for medical, para-medical and other staff required for the family planning programme. So far 41 State family planning training centres have been set up, out of the proposed 46, at the rate of one for every 10 million population.

The capacity of the existing institutions will be augmented to take as much training load as possible.

To attract a large number of candidates from the States, the value of stipends is to be raised.

There are already 5 central training institutes to train the trainers, extension educators and some other categories of the staff.

The Indian Medical Association has launched a scheme to train private medical practitioners, and 600 doctors from all the States have already received orientation training. These doctors will train other doctors in their own region.

Central family planning field units have been established in the various States to help in the training and field study programmes. There are 16 such field units in the country which had trained 3,976 doctors, 3,128 extension educators, 1,834 health visitors, 2,242 field workers and 57,510 others by the end of March 1967. The field units had also arranged 6,809 orientation camps and 4,372 film shows.

So far, about 14,000 trained auxiliary nurse midwives are employed in maternity and child health and family planning work. There are 307 training schools for auxiliary nurse midwives with an annual admission capacity of 5,000.

# Andaman and Nicobar Islands on the Road to Prosperity

S.L. BATRA

The Andaman and Nicobar Islands, long cut off from the mainstream of progress and development, are slowly coming to life. The foundation for their prosperity is already being laid.

UNDER the old colonisation scheme, 3,281 families were settled in the Andaman and Nicobar Islands between 1949 and 1963. Of these settlers 2,861 families, numbering 12,000 persons, were displaced persons from East Pakistan. The remaining 420 families were from Bihar, Madras and Kerala. These settlers, concentrated in the islands of South Andaman (1951), Middle Andaman (957), and North Andaman (1373), are reported to be well off and happy.

During 1965-66, another 1,200 migrants of East Pakistan were moved to Betapur and Mayabunder in the Middle Andaman. They are at present engaged on road construction, jungle clearance, etc. During 1966-67, 223 families of migrants from East Pakistan and repatriates from Burma comprising about 980 persons were moved. In 1967-68, 402 migrants from East Pakistan were settled on the Islands.

The Andaman islands have been described by the Prime Minister Mrs. Indira Gandhi as a "special area", eminently suitable for integrated resource development, particularly for the rehabilitation of migrants from East Pakistan.

The islands, covering an area of 3251 square miles, are rich in natural resources. The population of the islands in June 1965 was estimated at about 75,000, with a density of about 20 persons per sq. mile, as against the all-India average of 392. There is, thus, considerable scope for resettlement of people from the mainland.

An inter-departmental team, set up to prepare an integrated resource development programme for the islands, observed that the land, if properly and fully exploited, can

support a much larger population. The team has, therefore, visualised that by the end of Fourth Five Year Plan, the islands should be able to support an additional population of about 75,000, of which about 15,000 would represent the natural growth and the remaining 60,000 would be those moved from the mainland and resettled in the islands. By the end of Fifth Plan period, it is proposed to increase the population by another one lakh. In order to sustain this increase in the population, additional jobs for 25,000 and 33,000 persons will have to be created during the 4th and 5th Plan, respectively.

The migrants from East Pakistan, repatriates from Burma and Ceylon and other persons from the mainland answering to specific occupational requirements, are expected to provide the main source of additional population to be settled on the islands. The idea is to get the right type of people for the specific programmes and projects visualised in the development programme and also to ensure generally the development of mixed communities.

The inter-departmental team has recommended a development pro-

*Mr. S.L. Batra is a Research Officer in the Department of Rehabilitation Government of India.*

gramme, which would create sufficient employment potential to absorb the additional population. The development programme lays great emphasis on land reclamation. It sets a target of about 1.25 lakh acres during the next 10 to 15 years. The islandwise programme phased over Fourth and subsequent Plans is as follows:

|                                       | Acreage to be reclaimed |          |                  |
|---------------------------------------|-------------------------|----------|------------------|
|                                       | Target                  | 4th Plan | Subsequent Plans |
| Middle Andaman                        | 3,000                   | 3,000    | —                |
| Little Andaman                        | 60,000                  | 8,000    | 52,000           |
| Neil                                  | 2,500                   | 2,500    | —                |
| Rutland                               | 6,000                   | —        | 6,000            |
| Mangrove                              | 15,000                  | 4,000    | 11,000           |
| Katchal                               | 10,000                  | 6,000    | 4,000            |
| Great Nicobar                         | 15,000                  | 1,500    | 13,500           |
| Non Cowrie, Camorta and Trinket Group | 15,000                  | —        | 15,000           |

The reclaimed land will be utilised for cultivation of paddy, pulses, oilseeds and vegetables, as well as for the growing of rubber, coffee, sugarcane, spices, arecanut, coconut, etc. Agriculture, on the whole, is expected to provide employment to about 12,000 persons (2,700 families) during the Fourth Plan. Jungle clearance, extraction of timber and other activities connected with forestry will provide employment to about 1,800 persons (400 families).

## Development Schemes

A scheme for the development of coastal, off-shore and deep sea fishing aimed at increasing the present catch of 200 tons to 2,000 tons per year has been drawn up. The programme also envisages at present, the distribution of 100 country boats among the local fishermen, production of 160 power boats and 50 deep sea vessels. Arrangements to train fishermen in the use and handling of up-to-date equipment and for marketing the catch are the other planks of the scheme. Nearly 200 persons (about 270 families) are expected to get employment from this.

The development of industry, as commended by the inter-Departmental team, aims at the integrated use of forest resources in selected areas. The expansion of the existing units manufacturing plywood and the setting up of additional units has been suggested by the team. It has also proposed that new industries, for the manufacture of article boards, matches, pencils, pens and roofing shingles have been commended. Besides these wood-based industries, the team has suggested the establishment of a gar factory, with an annual capacity of 60 to 70 thousand tons of gar, fruit preservation units and number of cottage and village industries, such as shark leather, r and khandsari making, paddy skinning, oil extraction, copra drying, making of cane baskets and furniture, coir products and match making are reported to have scope for development. About 3,200 persons (about 710 families) are expected to be provided employment.

In the sphere of transport, the main features of the programme suggested are the construction of jetties each in Little Andaman, Katchal and Great Nicobar, and one each in Rutland, Neil and Havelock. For the development of the roads, the team has proposed that the construction of the Little Andaman trunk road, connecting the proposed two jetties, should be completed, and work on the peripheral road in Katchal, expansion of the existing sea and air transport facilities between the mainland and the Islands, and the Islands themselves should be accelerated. Nearly

2,000 persons (445 families) are expected to be employed when transport facilities are developed.

Opportunities of settlement of displaced persons and repatriates are being utilised in the projects which have already been taken up for implementation. Although, the Rehabilitation Department has been somewhat handicapped during the last three years, as regards taking up of new projects, several have already been initiated, while some more have been approved and are ready for implementation.

## Achievements

The progress so far made in various directions is, however, quite impressive. A programme for reclaiming about 25,000 acres of land during the next four or five years has been drawn up. Reclamation operations at Betapur in the Middle Andamans on about 3,000 acres began in 1965, and 2,050 acres of land have already been reclaimed. On the reclaimed land varietal sowings of paddy and experimental farming operations have begun. The land is being made over to 360 agriculturist migrants from East Pakistan for cultivation and settlement.

A Rubber Research-cum-Development Station, covering 600 acres in South Andaman, is being set up. Planting of rubber has almost been completed in this area. Some 37 families of repatriates from Burma are already engaged on this project. Also, the commercial plantation of rubber on about 6,000 acres in the Katchal Island has been approved. The project is estimated to provide employment to 1,200 families.

A pilot project for the reclamation of 4,000 acres of mangrove forests in South Andaman has been drawn up and is being processed for implementation. About 600 families will be settled on the reclaimed land.

It has been tentatively decided to undertake the reclamation of 1,500 acres of land in the Great Nicobar and 2,000 acres in the Little Andaman Island. Meanwhile, manual reclamation on a small scale of about 500 acres has been taken up in the Little Andaman Island to meet the requirements of a base camp, etc. About 2,000 acres of land are available in the Neil Island. Of these 1,000 acres

are being cleared manually; and coconut and arecanut plantations will be developed on the reclaimed land. Last year, 86 families were moved to the Island to work on the reclamation project. Another 200 families are likely to be absorbed later.

The existing transport facilities, which are inadequate for the growing needs of the Island, are being expanded. Disembarking facilities in the Katchal Island have already been provided. Appropriate disembarking facilities are also being provided in the Little Andaman, the Great Nicobar, Neil, Havelock, Diglipur, Kamorta and Mayabunder Islands. Temporary disembarking facilities, in the shape of pontoons, have been provided in Great Nicobar and the Little Andaman Islands.

## Difficulties

The existing mainland-island and inter-island sea transport is being strengthened. The Government have already approved the construction of four new ships and the acquisition of a second-hand passenger-cum-cargo boat for the purpose. A second-hand vessel and a timber carrier have been acquired, and the two vessels have already started sailings. Orders for the construction of a passenger vessel have been placed, and the Shipping Corporation of India is taking necessary steps for the construction of the remaining vessels. The question of providing an all-weather air service from the mainland to Port Blair was examined by a technical group specially constituted for the purpose. The group recommended several short-term and long-term measures. The recommendations which are being implemented include the expansion of the existing runway to 6,000 feet; the provision of landing facilities, and strengthening of the existing meteorological facilities. A distance indicating wind equipment is also being installed.

The Islands, long cut off from the mainstream of progress and development, are slowly coming to life. Nevertheless, progress in the execution of development projects and resettlement programmes is not very rapid. This is due to certain limiting factors, the most impor-

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## Side Track

### A Pleasant Drive

TAXI drivers in the country are the nightmare of the ordinary passenger. Very often going in taxi cars and scooters end up in unpleasantness, in wordy duels between the drivers and passengers, over the passengers being taken on circuitous routes or their not paying enough for the extra luggage.

Will it not be a pleasant surprise if your scooter driver instead of bargaining over the fare tendered tell you about the economics of a small family? You will have this nice experience if you happen to hire a scooter of Sardar Didar Singh in Delhi. The young Sikh (28) displays on the back of his scooter the well-known red triangle, the symbol of family planning, and the message "two or three : enough".

Didar Singh became a convert to family planning and underwent vasectomy a few months ago. The reason was that his daily earning of Rs. 20 was not enough to provide his family of five with reasonable comforts. For him, mere existence was not enough; he wanted to LIVE. Not only did he volunteer for the operation, but soon converted six more of his neighbours to his view and made them follow his example. And, at the earliest opportunity that he gets with his passengers he talks to them about family planning.

### Brother of an Earl

Few will be found who sympathise with the lot of a police constable. To have a dig at the cop or jibe at him is a pastime of many in the country. Ordinary mortals would have come across umpteen instances of the policemen's rude or foolish behaviour. But, it is seldom that a V.I.P. will have the chance to blame a cop's lack of aesthetic sense or fine taste. Bertrand Russel, in the second volume of his autobiography, published recently, describes an interesting encounter he had with the police half a century ago. The philosopher was jailed for six months for his pacifist views. A short time before, while addressing

a meeting, he was heckled by a mob. When the mob fury went up and grew wild, a friend of Russel asked a policeman to intervene saying that he was an eminent philosopher. The cop shrugged. But "he is famous all over the world as a man of learning", the friend pleaded. The policeman was not impressed. "He is the brother of an earl", the friend cried desperately; and the policeman lost no time in rushing to the philosopher's rescue.

### Lucky IITs

UNEMPLOYMENT among engineers in this country has been a festering sore worrying our administrators and planners. It is believed that even graduates of the five Indian Institutes of Technology, declared as "institutions of national importance" have sometimes to go through an incubatory period of unemployment before getting an opportunity to use their skill acquired at a high price. The results of a comprehensive survey carried out recently on the pattern of employment of graduates from these institutes show that the picture is not all that bleak.

All graduates in engineering, who graduated from the Indian Institutes of Technology at Kharagpur, Bombay, Madras and Kanpur during 1961, 1962, 1963, 1964 and 1965, were covered by the survey. The IIT at Delhi was not included as its first batch of graduates came out only in 1966.

The coverage is limited to those who graduated during the Third Plan. The IIT, Kharagpur, was established in 1951 and batches of its graduates have been entering the labour market since 1956. But in the remaining three IITs, the first batch of graduates came out only during the Third Plan: in 1962 from IIT, Bombay, in 1964, from IIT, Madras, and in 1965 from IIT, Kanpur. Moreover, it was only during the Third Plan, and that too during the latter half of it, that a point of numerical balance between demand for and supply of graduate engineers was found to be within reach and doubts began to



IGNORAMAN

Wants to Know

if

we will find

a substitute for news too  
with the newspapers  
on strike

be voiced about the capacity of the economy to gainfully absorb all the new graduate engineers.

The total outturn from the four Institutes of Technology during the period covered by the Survey is 2,292.

The Institute sent questionnaires to 2,164 of them whose addresses were available and replies were received from 1,041 or almost half of the total.

The analysis of the survey adds up to a total picture which is not discouraging from the point of view of the IIT graduates. There is very little unemployment among them and the delay in getting employment is by no means long or alarming. Their salary levels are better than levels of other comparable groups of engineers.

The extent of unemployment among the respondents is of the order of 2.6 per cent and should not normally induce any alarm regarding the prospects of IIT graduates. It is nevertheless of some significance that out of 27 respondents who were unemployed, 12 are from the 1964 batch and nine from the 1965 batch. There has also been a gradual lengthening of the waiting period between graduation and a job for the 1964 and 1965 batches.

## BOOKS

### CONSTITUTION OF INDIA

*The Constitution of India: A Comparative Study by Dr S. C. Dash. Published by Chaitanya Publishing House, University Road, Allahabad-2. 621 pages. Rs 16.*

P. C. Roy

THIS book, first published in 1960, takes into account the fundamental features of the Constitution of India along with those of the United Kingdom, the United States of America, Weimar Germany and the West German Federation, showing precisely where they resemble closely, look superficially alike, make compromises or strike out a path of our own. Essentially a study in contrast, the book analyses the working of our Constitution during the last 18 years.

The second revised edition is timely. It appears at a time when many of our best minds are greatly exercised over the consequences likely to flow from the strains and stresses which the Constitution is undergoing, particularly after the 1967 general elections. In this revised edition the author has taken note of recent developments and has presented an incisive analysis of the current situation. He seems to be a firm believer in the western type of democracy, which in his opinion has made India a bastion against the onrush of totalitarian communism, insulating her at the same time against the political intrigues which flourish in West Asian countries. The author, however, is keenly aware of the many incongruities in our federal type of democracy. His exposition of the Presidential rule, right from its beginning in the former State of Patiala and East Punjab States Union, leads to the emphatic conclusion that the emergency provisions of the Constitution are being

used for party purposes, restrictive practices and arbitrary legislation. According to him the blame will rest on the people if India loses her growing democracy, because the Constitution provides all safeguards against such a contingency and aims at establishing "a full-fledged democracy, both in peaceful and emergent circumstances". He finds a degree of Centralism in our Federalism, which disables the States to act as a check on the authority of the Central Government. Federalism can prevail only in normal and peaceful times while in an emergency, unitarism becomes the rule. The reason is that the Indian Union is not based on any agreement by the units composing it. Nor will it allow any one of the constituents to secede from the federal body. Dr Dash also does not believe that, within a foreseeable future, there can be any alternative for Congress rule. He also rules out the possibility of an eventual coalition of parties, particularly at the Centre. He, therefore, concludes that democracy in India is in a very weak position against attacks from the President (nominee of a single party), the Cabinet (leaders of a single majority party) and the Parliament (dominated by a single party majority).

In a volume of more than 600 pages a slip here or a minor inaccuracy there is not worth noticing. Even so, it may be pointed out that Dr Dash has not taken into account the Communist Party of India when he says that with the exception of Indian National Congress and Hindu Mahasabha no other national party can lay claim to a history of more than fifteen years (p. 523). It is also not correct to say that in 1967 there were "9 Union Territories in India" (p. 156), when the actual number is 10. But these are minor blemishes in an otherwise scholarly work of great value. The book has an excellent bibliography, a reliable index and two appendices. It is sure to be of great interest and wide appeal to a large section of readers in the country and outside.

### DEMOCRACY IN KERALA

*Political Preferences in Kerala* by K. G. Krishnamurthy and G. Lakshmana Rao. Published by Radhakrishna Prakashan, Delhi. Pages xii+99. Rs. 12.

K. D. Sharma

INDIAN democracy has stood the test of four general elections on adult franchise basis. That all the four general elections have been, by and large, peaceful, is evidence of the deep-rooted democratic tradition of the Indian people. Further, the number of voters has shown a rising trend in each election. This also indicates that Indian democracy is attaining maturity. However, if one were to analyse the voting preferences, one would come to the sad conclusion that the Indian voter has still not attained political maturity. Caste, creed, colour and family affiliations still continue to be the guiding considerations in exercising their political will.

There have been sporadic attempts by scholars to analyse the changing pattern of political preferences as an academic exercise. There has been very little State-wise or country-wise analysis of the voting pattern and emerging political shifts in the political arena of the country. The authors have attempted an analysis of the voting behaviour of the legislative assembly constituencies in Kerala. They have specifically taken up Kerala for their study, because they feel that the State is politically the most disturbed and conscious State. This was the only State that voted for a non-Congress Government even before the last general elections, which the Congress lost in many States. This is also the State which has had three mid-term elections (1954, 1960 and 1965).

The first two chapters deal with the socio-economic, religious, occupational, demographic and political background of the State and its

various regions. Chapter III explains the limitations of the study, the methods and techniques which were adopted for the collection and processing of data. This chapter can be of immense value to students and researchers of sociology in India.

Chapter IV deals with the increase in the number of electors and the votes cast in all the four general elections. Chapter V gives the impact of the socio-economic, demographic and political variables on the voters' turn-out pattern. The authors have also identified the main factors responsible for variations in the voter turn-out, which is the highest in the country at any general election. Although the authors have tried to correlate these factors with the preference of the voters, it is very doubtful if these preferences are based on confirmed political affiliations on ideological grounds or are only an expression of expediency.

The authors have dealt at length with the historical background of the Communist Party, the Congress, the Muslim League and SSP. An analysis of Communist voters' turn-out in Kerala according to the size of the towns has also been attempted. The authors say that the CPI has drawn its support from the rural areas and from among the middle and small town areas. But these areas have also exhibited big fluctuations in their support to the Communists. The CPI is deriving its maximum support from heavy and moderate labour areas, and its minimum support from cultivator-dominated and low labour pressure areas. The data also reveal that its strength is waning. In fact, it was the weakest in all the three general elections in areas dominated by cultivators.

The strongholds of the Congress are those where cultivators are dominant. In the big towns and rural areas also the Congress has a big hold. This may be due to the influence of the Panchayati Raj, the C.D. programme and co-operatives. The other factor responsible for this may be the help given by the Nair Service Society to the Congress in the rural areas. In the larger towns, this is due to the literate white-collar workers in Government service and private companies. This group

faithfully supports the Congress. These observations do not confirm the hypothesis set out earlier that the voters have no fixed ideological affiliations.

The SSP is drawing maximum support from the areas in which the Communists have been drawing their major votes. But the SSP is definitely not as strong as the CPI and its strength is decreasing more rapidly than that of the CPI.

The authors have produced an enlightened study of an interesting situation. It should be useful for political pundits to plan their strategies.

### CERES— F.A.O. Review

*FAO Review. Volume I Nos. 1 and 2. January-February 1968, and March-April 1968. Published bi-monthly by the Food and Agriculture Organisation of the United Nations. Subscription for 6 issues—\$ 2.50 (U.S.A.); 17s. 6d. (Sterling).*

M.K. Dharma Raja

FAO Review is the new bi-monthly magazine of the Food and Agriculture Organisation published in Rome and distributed throughout the world in three languages—English, French and Spanish. The Review reports fully on how agriculture, science and international trade are meeting the demand for food from a constantly growing world population, the dramatic social and economic changes that inevitably accompany development and the progress of development projects. It also brings to the reader the opinions of the world's eminent authorities on approaches to development, the needs and potentials in the developing areas of the world, and the opportunities they present for investment. The publication is intended to interest those who are concerned about the most important problem confronting humanity in the twentieth century—the elimination of hunger and poverty.

"Ceres", which is the name of the review, is the Roman version of

the Greek goddess Demeter, regarded as the deity of foodgrains and agricultural crafts.

The Review has been launched as a forum for dialogue on the world's farm front. And dialogue it is on a global canvas, featuring contributions by some world authorities and others qualified to speak on various aspects of food and farm development in both developed and underdeveloped countries. The pages of the review also carry, 'World Report' spotlighting the striking efforts made in each region or country, the latest trend in commodities and an opinion survey culled from authoritative sources.

FAO today has more than a thousand projects operating in some 80 countries. The projects and the many significant studies undertaken by FAO provide meaningful material for a section entitled "In the Field". Towards the end comes a review of books devoted to food, farm and development subjects, generally.

The two volumes contain articles by some eminent contributors. FAO's new Director-General, Addeke H. Boerma, in an interview on aid and trade problems, dwells on the need for assistance to be concentrated on certain key sectors. World-aid administrators and leaders of developing countries should take note of an article by the English economist and author, Thomas Balogh. He suggests that the formal, classical system of education, whether inherited from the colonial era or imposed upon in the form of assistance is not fulfilling the need for trained agricultural technicians and efficient farmers in the third world.

Of interest to developing countries and particularly to India are contributions by S. Srinivasan of Hindustan Lever and Ashok Parthasarathy. In "Partners in Rural Industry", Srinivasan relates how his company has worked with small farmers of Uttar Pradesh in building a successful dairy products industry, with consequent economic benefits to the region. Ashok Parthasarathy, an outstanding scientist, writes about the problem of brain-drain as a serious obstacle to development of the poorer countries.

The section, entitled "Opinion", is interesting and instructive. It

highlights a variety of opinions of eminent people. For instance, Prof. P.M.S. Blackett says, "Just because of big difference between the wealth of the rich and the poor countries, a little additional aid from the rich can mean so much to the poor." At the other end of the spectrum S.O. Adebo says: "I am as much concerned, if not more concerned, about the gap between rich and poor individuals—within the individual developing countries themselves."

The Review sets a high standard of illustrative, colour photographs depicting development efforts in every continent—pictures of hunger and poverty and the massive campaigns to surmount them.

## SOCIOLOGY OF EDUCATION

*Papers on the Sociology of Education in India, edited by M.S. Gore, I. P. Desai and Suma Chinis, on behalf of the Co-ordinating Committee for Studies in the Sociology of Education in India. Published by National Council of Educational Research and Training, New Delhi. 363 pages. Rs. 8.75.*

S. C. Seth

THE present publication is a collection of papers considered at a Seminar sponsored by the Tata Institute of Public Services and financed by the National Council of Educational Research and Training on behalf of the Education Commission.

Undoubtedly, the important role that the educational inputs can play in accelerating or decelerating the socio-economic developments in a country need no special emphasis. The educational function would remain the fundamental requisite to modernise India. However, there would always be differences of opinion regarding the nature of the educational programme that a country should adopt, and the 'order of priority' that it may follow. In this respect the Indian academician continues to fail to grasp the realities of the developmental process. This becomes all the more apparent when one goes through these various thematic papers'. They are full of

statements which are verbose and, at places, even inaccurate. For instance, the article entitled 'Modernisation and its adaptive demands on Indian Society', by Prof. S. C. Dube, which is in the nature of an average class-room lecture, is commonplace in its analysis of the main theme of the book. A typical paragraph in it (Page 40) spells out the Indian situation in these words:

"India is an old society, but a new nation. It provides an excellent example of the puzzle-moment and paradoxes of a modernising situation. Its small but significant pockets of modernity are set against a vast hinterland of tradition. It has a split image of the future: it cannot take two steps ahead looking back at least once... at best they gain inches where they should have gained yards."

It will be hard to say if such statements extend the boundaries of knowledge, either of Indian education or sociology, even by a few centimeters. Likewise, in the paper entitled "Social Changes and Educational Policy", A. R. Desai states:

"The Five-Year Plans of India are strengthening the classes who derive their income from profits, interests and rent and a small sector of an upper salaried and professional group."

One wonders what are the data, educational or sociological, on which such fallacious arguments have been advanced. Even the 'library research' has shown better results elsewhere.

Finally, we come to the question: What is the message of this book? Can those who have to deal with educational problems take their cue from these papers? Are these adequate to help build a conceptual model? Obviously this book fails us here. But, with better editing of the papers, perhaps, NCERT could have averted a poor and inconclusive contribution.

On the practical side, the basic sociological question which needs to be examined here is: How to communicate in a subtle manner with such a large mass of people without unduly wasting our time and resources? What educational programme and media of dissemination of knowledge can possibly

achieve this? We do not gain much in this direction either. Could it be a programme of 'adult education' launched on a mass-scale, which would reach every segment of the social strata, including the remotest cultural sub-groups? A reference to the correspondence course in this book (Page 138) is a poor educational recipe to tackle the ills of Indian society.

The trouble with the Indian thinker is that in his efforts towards establishing a correlation between 'social analysis' and 'social cure', he suffers from a mental impediment. At times, he faces purely semantic difficulties, which affects our programmes adversely. Besides, the word 'adult education' need not connote merely a literacy programme. Techniques of 'adult education', 'further education' and 'continuing education', if used imaginatively, could bring a touch of realism in our efforts to reach the people directly. And what else could advance understanding of the 'sociology of education' than an actual programming and perfecting of mass-education media which could cut at the traditional barriers to change? The paper by Leslie Palmier, entitled 'Educational Systems of Southern Asia and Social Stratification', does develop this point to a limited extent.

Apparently, to expect too much from 'library research' is in itself wrong. It is doubtful if the conceptual framework, which this disjointed set of papers has tried to build, has really spelled out anything of much practical utility, since they cover a well-explored territory. In fact, the total achievement of the book could have been realised amply if, instead of the mumbo-jumbo of various papers, the book had concentrated itself mainly on the first paper, namely the 'Scope of a Sociology of Education', and the last paper on 'Sociology and Education Research', which deals with the major areas and sub-areas of research on education and culture, and tries to explain the relationship between education and the social system in India, and its internal organisational set-up.

As individual studies, these papers would have proved far more useful, but collectively they fail to clinch the issue.

## THE CHANGING FACE OF AUSTRALIAN ECONOMY

K.V. IYER

THE Australian economy is at present having a boom with all-round development of agriculture, industry, mining, transport and communications and social services. The per capita income in Australia (\$ 1,611) in 1965 was slightly higher than that of the United Kingdom (\$ 1451), nearly two and a half times that of Japan (\$ 696) and nearly 18 times that of India (\$ 89), though it was lower than that in New Zealand (\$ 1734), Canada (\$ 1831) and U.S.A. (\$ 2893).

The country which was predominantly agricultural before the Second World War is rapidly emerging as an advanced industrial nation. There has been a significant shift from primary industries to the secondary and tertiary industries, followed by the spectacular discovery of mineral resources and the diversification of industries. A large number of industrial firms have been set up with British and U.S. technical and financial collaboration. Extensive areas in the interior are being developed and new communication centres being built up at a rapid speed. There is progressive standardisation and dieselisation of railways, building up of new and better roads and a vast expansion of the domestic and international air services and sea transport. Increasing emphasis is being placed on the utilisation of indigenous raw materials and various incentives are given for boosting exports.

In view of the small population of only about 12 million for an area nearly two and a half times that of India, the country has been encouraging immigration on a large scale from Europe and other non-Asiatic

countries; nearly 20 per cent of the Australian nationals at present are those who have migrated to the country since the Second World War.

New mines have been opened in remote areas which face to some extent difficulties in attracting the right type of labour and providing them with proper housing and welfare facilities. The emergence of secondary industries, such as steel and engineering, automobiles, chemicals and fertilisers, petrochemical complexes, etc., has given a face-lift to the economy bringing immense benefit to the community through the supply of essential articles of everyday use at reasonable prices.

### Industrial Relations

In the field of industrial relations there have been no major problems and, on the whole, labour-management relations are cordial. Most workers appear to be satisfied with the good wage levels, housing conditions and other amenities provided to them. In view of the shortage of skilled as well as semi-skilled labour for opening up new areas and new lines of economic activity, automation is being introduced in all possible sectors and as rapidly as possible, so as to keep up the tempo of economic activity. Thus, in certain respects, the conditions in Australia differ considerably from those in India.

The industrial arbitration system is a 'social philosophy born in Australia for Australians and truly Australian'. The system has been

*Mr. K. V. Iyer is Joint Director, Labour and Employment Division, Planning Commission.*



working successfully. There have been no major strikes or any serious and unhealthy labour management relations in the country.

However, women workers, generally speaking, are paid lower wages than men, sometimes for even identical types of jobs. Many economists in Australia seem to hold the view that women's income is, by and large, supplementary to that of men and that any increase in their remuneration, to bring it on par with men, might lead to inflationary tendencies which the nation would like to avoid at all costs.

The country has been by and large, able to provide housing and other facilities to the workers and other sections of the public at a pace, rapid enough to match the requirements of its expanding economy.

The development of secondary industries through local initiative and overseas collaboration has brought in new skills and expertise, more employment opportunities to men and women, better wages and fringe benefits and a higher purchasing power to most sections of society. However, the growth of large-sized industrial firms and business organisations has gradually resulted in impersonal relationship between the employers and the employees and the once well-knit bonds of family ties and friendship are gradually disappearing. The expansion and diversification of industries has also had a considerable impact on social conditions. The large-scale industrialisation and opening of new areas has led to immigration of people from other parts of Australia and from other

countries into these areas, resulting in a closer integration of Australian nationals, among themselves who were separated from each other through long distances.

Australia does not have a food problem as in India. Besides, it does not have to cope with the problems of unemployment, illiteracy, housing and so on. However, compared to other advanced nations, such as Britain, Canada and the United States, Australia has its problems resulting from isolation from the West, vast distances to be covered even within the country, long distances of the export markets and manpower shortage.

In agriculture, there has been rapid mechanisation of farms. Also, farming has become more capital-intensive than labour-intensive, with improved inputs and better technical and management know-how. The productivity has been increasing progressively. The farmers are able to maintain a high standard of living. With the inflow of immigrants from Italy and Holland who have brought special expertise in farming practices, even a farm of 25 acres has become profitable as compared to a minimum economic size of 100 acres until about a decade ago. Extensive areas have been brought under irrigation. During the past 20 years, the Snowy Mountains Authority has completed a multi-million dollar construction complex of 9 major dams, 100 miles of tunnels, 10 power-stations, miles of roads and towns, to serve the needs of water conservation, irrigation and power.

### Allround Progress

With rapid industrialisation, many of the older farms have disappeared giving way to industry, and new farms are being set up in areas which were hitherto desolate and unexploited. There has been a vast expansion in the industries allied to agriculture such as forestry and fishery. Extensive softwood forests have been planted in Southern Australia and in Tasmania and systematic exploitation and conservation of natural hardwood forest is being encouraged.

In the field of education, wide disparities are noticed in the curriculum and syllabi in different States

on account of the different educational systems followed. Efforts are being made by the Government to rectify the situation. There is a communication gap between parents and children and, in particular, between the first generation migrants and their children. The existing education system is geared mainly to producing technical personnel who invariably join some firm or the other after secondary education, as there is abundance of jobs, and only a small proportion of school students go to the universities for higher education. There is need for imparting some more general-purpose education to build up an all-round personality for the average citizen.

There is evidence of all-round progress in the field of application of science and technology, but such rapid advancements have also brought a good deal of human problems. On the one side, the vast developments in communications have conquered distances and isolation, the methods and techniques have brought increasing prosperity, and scientific developments have given increased span of life and greater leisure; on the other hand, these developments have created, in their wake, various problems such as pollution of atmosphere, increase in road accidents, destruction of natural resources, and impersonal attitudes.

## QUOTATION BOX

There is no harm in borrowing, but it is harmful to borrow to continue borrowing. It is not mass production but production by the masses which is needed.

—Dr Atma Ram in "Weekend Review"

If society is in danger, it is not because of man's aggressiveness, but because of the repression of personal aggressiveness in individuals.

—From "New Statesman"

A bout of journalism may be good for the (creative) writer but bad for journalism.

—From "Time"

Unfortunately Governments do not always learn from the experience of others. Often they do not learn even from their own experience.

—Girilal Jain in "The Times of India"

Modern communications turn every human being into a potential critic. A yawn from Sartre and all Africa trembles.

—Cyril Connolly in "The Sunday Times"

With all the political canonisation we have accorded to Gandhiji, he remains still a much misunderstood man.

—K.M. Purkayastha in "Swarajya"

The Young Turks threatened to raise the banner of revolt against the old leaders. But they themselves were led by old fogeys.

—From "Swarajya"

Both in conversation and in books, people today are only too ready to take their clothes off in front of total strangers.

W.H. Auden, English poet, in a recent speech

Most kids live in cities. So do most rats.

—An American advertisement

The story is told that once General de Gaulle and Khrushchev were comparing notes on their respective Foreign Ministers.

General de Gaulle boasted: 'Mine is so loyal that if I told him to sit on a block of ice, he would do so until it melted'.

Khrushchev retorted: 'Mine would too but the ice would not melt'.

—From "Commerce"

A pinch of 'probably' is worth a thousand of 'perhaps'.

—James Thurber in "Lanterns and Lances"

Why cannot some of our ICS men be converted into computers? The ICS, as is well known, has a steel frame and the cadre is full of wheels within wheels. If, when the ICS man retires, instead of making him a Governor or letting him take a brief-case and become a perquisite-laden box-wala, we give him computer status and ask him all the difficult questions they ask computers in America, including who will win elections or whether the baby will be a Siamese Twin, he will be happy and we will be among the advanced nations in a trice.

Super in "Patriot"

## BIG DEEDS, HUMBLE MEN

In this new feature *Yojana* seeks to present the outstanding achievements of some of the many millions of obscure farmers who are fighting the nation's battle for food.

### IR-8, TN-1, CO-25

IR-8 has come to be welcomed by paddy growers in Kerala, Andhra, Orissa and other States as almost a wonder seed. Last May in Buhalo village in Orissa, Abhiram Sahu got a yield of more than 3800 kgs. per acre by cultivating IR-8 and earlier in the rabi season he got 4200 kgs. by growing Taichung Native I. His expenditure was only Rs. 400 an acre. In Andhra, K. Narasimha Raji of Penumatra block in West Godavari sowed IR-8 in 22 acres during the last rabi season. His yield per acre came to 2600-3000 kgs. His expenditure per acre was only Rs. 280.

High-yielding varieties of all kinds of foodgrains have been sought after by farmers all over the country. If some farmers fancy IR-8, others prefer Taichung Native I and a few others CO-25. In Madras, N. Srinivasan of Konerirajapuram knocked off the second prize in the All India Paddy Competition two years ago by cultivating CO-25 in two acres of land and producing about 5,300 kgs. per acre.

In Orissa, led by Devendra Kumar Parida, farmers of the cyclone-hit Atul Block extensively cultivated Taichung Native I during the rabi season. Harekrishna Swain of Tunga village got a yield of 171 maunds of paddy per acre and Narasimha Sahu of Binika Panchayat got 166 maunds.

### TEN TIMES BAJRA

Ten times the average yield of any crop would have been considered impossible a few years ago. Not so now. Against an average of 290 kgs. of bajra per acre in Gujarat, Bhavan Devji Kanzaria cultivated hybrid bajra in his one-acre plot and got a yield of more than 3,270 kgs. No wonder he bagged the first prize in the District Bajra Crop Competition. Earlier the same farmer had harvested from the same plot 10,500 kgs. of potatoes.

New irrigation schemes have brought brighter prospects to farmers

THE agricultural wind of change that sweeps through the country today brings in its wake exciting stories of remote villages taking to the latest mechanised farming equipment, of tradition-bound farmers eagerly seeking high-yielding seeds. Almost each day an unheard-of farmer in an out-of-the-way village springs into news with a record harvest, of paddy, wheat, bajra or cotton. Drought or floods fail to deter the awakened Indian farmer from contributing his mite to the country's march towards self-sufficiency in food.

### DEFIES DROUGHT

For instance, Hari Narayan Singh of Gaya in Bihar. His village, Dunarawan, was one of the worst drought-affected in the State. Undaunted by drought, he worked on his 3-acre farm using all modern methods of cultivation available to him. He used the requisite amounts of fertiliser and manure at different stages: before sowing, immediately after transplantation, 15 days later and at the time of flowering. Proper dosages of ammonium sulphate, urea, phosphate and potash and also compost were applied. The result was 14 maunds of paddy from 12 cents of land in which he had carried this experiment of intensive cultivation.

### A TRACTOR STORY

Farmer Umapathy of Sathamangalam village in South Arcot has a different story to tell. He is not a small farmer like Hari Narayan Singh. He owns 300 acres. In his case it was a tractor which wrought a transformation. He bought a tractor for Rs. 20,000 which he got as a loan from the Government. He ploughed his 300-acre land with the tractor and sowed a high-yielding paddy, ADT-27. He applied manure, fertiliser and pesticides at the correct time. His total investment in the form of inputs came to Rs 350 an acre. His net returns from an acre came to Rs. 1350 and his yield of paddy

almost doubled to 3000 kg. per acre. Inspired by Umapathy's example, big and small farmers of Chingleput and South Arcot districts of Madras have begun to get tractors on hire from the Panchayat Unions or are buying from the State Agricultural Department on hire-purchase basis. The tractor is no longer an unfamiliar sight in this area.

### SURGEON'S PLOUGH

Examples of farmers taking to better methods of farming to increase their yields are exciting but not surprising. Not so the case of a surgeon starting farming after retirement, and soon growing into a model farmer. Dr. V.R. Narayanan Nair, 66, a retired Director of Health Services, was the first to cultivate IR-8, a high-yielding paddy in Trivandrum. From his 2½ acres in Mannanthala he has harvested about 5 tons, double his usual yield. He now raises three crops a year instead of the usual two. Unlike many who preach but never practise, Dr. Nair preaches only what he practises. He has distributed free of cost 50 kgs. of IR-8 seeds to poor farmers in Neyyattikara, a place near Trivandrum. He has stipulated one condition; that each of them should multiply the seeds and distribute them to ten others. As President of the Nair Service Society, which runs 18 colleges and 100 schools, Dr. Nair is persuading teachers and students to grow paddy and vegetables in their institution campuses and homesteads.

in different States. With the opening of the Nagarjunasagar Canals, farmers who have been traditionally cultivating commercial crops like chillies and tobacco have switched over to foodgrains. Jampani Sambaviah of Tadikonda sowed HB-1 bajra in one acre during the last Kharif and within 10 weeks harvested 1,481 kgs. During Rabi from the same plot he got more than 1,500 kgs. of hybrid maize. The two crops together brought Sambaviah in a year an income of Rs. 2,000.

An owner of a 3-acre plot in Yemmiganur in Andhra Pradesh, U.M. Narasiah availed himself of the irrigation facilities under the Tungabhadra low level canal system to cultivate Sea-Island cotton, a high-yielding variety used in manufacturing fine cloth and obtained the highest yield of cotton in the country. His yield was more than 1,700 kgs per acre. Narasiah earned a profit of Rs. 17,000 from his three-acre plot.

## ANDAMAN ISLANDS

from Page 18

tant of which is the weather. Only between January and April, and to some extent in October, is the weather good for outdoor work. In all other months, rainfall is heavy, limiting the working season to about 5 months in the year. The provision of adequate infrastructure and improvement in the present means of transport and communication will take some time and may, therefore, act as deterrent to the speedy execution of development programmes. Another factor impeding progress is that the islands are deficit in food and other necessities. Induction of more manpower in the islands will require adequate and timely arrangement for the procurement of these goods from the mainland, which is not only time-consuming but difficult. The shortage of trained personnel required to man the various development projects pose serious problems, particularly during the first few years. But, with the passage of time these bottlenecks will disappear and the "Green Islands" will move forward towards prosperity. The foundation for this is already being laid.

## HIGH YIELDING HYBRID COTTON

### Gujarat's Gift to the World

FIFTEEN years of toil in the laboratory and the field has yielded a new variety of cotton, which ensures a record return of Rs. 3,000 to 4,000 per acre to the farmer. This new strain, Hybrid-4, as it is called, has been developed at the Cotton Research Station, Surat.

Hybrid-4 gives an average of two to three bales of cotton per acre, that is four times the average production in irrigated areas. An added advantage of this strain is that its plant rises to more than five feet—with its branches spread in all direction. Planted at a distance of 5 ft. x 2½ ft, the whole field gets covered by the time the flowering season begins in about two months after sowing. Its flowering continues throughout, and even if some flowers drop out due to rains or cloudy weather, the farmer can surely look forward to an assured flush. The variety is economical also as only a kilogram of seed is enough for an acre of land. As against other varieties of crops which take eight to nine months to mature, Hybrid-4, matures in just six to seven months.

Though the strain of this variety is a little shorter in staple length than the Gujarat-67 variety, it stands well in comparison in counts and strength.

## Bajra Grows in Saline Land

IN an experiment conducted at the Soil Salinity Laboratory at Jodhpur, it was observed that *kharif* crops like hybrid Bajra can be grown on saline land.

The field of Himat Singh, a progressive cultivator of Badi Khurd, a village about 60 miles from Jodhpur, was the scene of experiment conducted by the staff of Soil Salinity Laboratory. A soil sample was collected from his field which was regularly irrigated with well water of high salinity (7.0 millimhos cm.). An analysis of the soil sample showed that for growing hybrid Bajra, it required 50 lbs of nitrogen, 40 lbs of phosphorus and 20 lbs of potash per acre.

India was the first to give the world its cotton.

India is again the first to give the world its Hybrid Cotton.

India is the fourth highest producer of cotton in the world.

Over sixty countries produce an aggregate crop of 4,80,00,000 bales a year. Principal producers are :

|                   |                |
|-------------------|----------------|
| United States     | 150 lakh bales |
| China & Manchuria | 75 " "         |
| U.S.S.R.          | 70 " "         |
| India             | 45 " "         |
| Egypt             | 20 " "         |
| Mexico            | 20 " "         |
| Brazil            | 18 " "         |
| Pakistan          | 13 " "         |

Source : Encyclopedia Britannica : Vol. VI.

Gujarat is the highest producer of long and extra-long staple cotton in the country. It produces about 15 to 16 lakh bales in an area of about 42 lakh acres. With this new strain, the Government of Gujarat proposes to extend the area of cultivation to 150 acres for commercial production and 50 acres for seed multiplication.

After the laboratory tests, hybrid Bajra was sown in three plots of 10 x 10 metres each in August, and was harvested in October last. The average yield of the three plots was 20 maunds per acre as against an yield of 50 mds. per acre in normal soil and fertiliser conditions. With the use of higher doses of organic manure and better land preparation, this yield could go still higher.

In an area of more than 2 lakh acres in Western Rajasthan, where only one rabi crop was grown with saline water available for irrigation, the cultivator can now grow two crops in a year.

Mangi Lal Pareek

## PLANNING FORUM

### NO BENEFIT OF PLANS FOR NEWAJI TOLA

THE students of the Jagdam College, Patna, have made surveys of three villages in Bihar.

The first, a socio-economic survey of village Newaji Tola, a few miles from Chapra town, was conducted to assess the degree of awareness and enthusiasm of the village people for the Five Year Plans.

The study has shown that four-fifths of the people had never heard of the Five Year Plans. About 20 per cent who had heard of the Plans, did not know why and when these Plans were launched. In the absence of any direct benefit from the Plans, there was obviously no enthusiasm for economic planning amongst those few who knew about the Plans.

Though all the informants seemed to favour the idea of family planning, they did not like the modern artificial methods of birth control, which they thought were immoral. Abstinence was considered as the best method.

Most of their expenditure was on food, with clothing coming next. Expenditure on entertainment was practically nil. Every family spent more on medicine than on education. Besides this, each family was running in debt or a deficit.

All respondents disliked the office of B.D.Os. They complained that the B.D.Os. looked down upon them and were prone to bribes. For boosting agricultural production, the villagers wanted the Government to provide them with irrigation facilities, chemical fertilisers, improved seeds and timely credit. Only 2 persons out of 50 favoured

### SURVEYS OF THREE BIHAR VILLAGES BY A PATNA COLLEGE

co-operative farming and Bhoodan Movement. However, all of them vehemently opposed the idea of collective farming.

None of them was keen on taking to poultry farming, which they thought was a profession best suited to the Muslim community.

### NEGLECTED CATTLE OF NAINI

The second, a cattle survey of village Naini, has revealed that the cattle wealth of the village suffered a lot in the recent drought. Practically one head of cattle out of every four died during this period due to lack of fodder and scarcity of water. Milk productivity went down by 50 per cent and 25 per cent of the milch-cattle became dry. Disease among the livestock was still rampant. This was partly due to the apathy of the Block Veterinary doctor, who rarely visited the village even after receiving a call. Moreover, the villagers often had to pay high fees for his visit besides providing him with a conveyance. None of the informants knew of the campaigns launched by the Government to improve the cattle wealth in the country.

No firm attempt has been made by the Government to check disease among the livestock in the village. Sick animals are usually left to the mercy of God.

Cattle breeding is still a way of life, and not a business, with the villagers. Gowallas are the only professional cattle breeders.

Though none of the informants favoured poultry farming, 6 persons were willing to keep poultry provided the Government gave them birds free of cost.

There is no separate grazing ground for the cattle in the village,

except the compound of the Higher Secondary School. The cattle are kept in the open, as none of the villagers had enough finances to construct cattle sheds. No use was made of the hide of dead animals.

### FLOOD VICTIMS OF REVILGANJ

The third survey of the college related to the flood victims of the village Revilganj. According to their findings, though the Government was doing a good deal of relief work, the dishonesty of the Government officials prevented it from reaching the people. The animals were the worst sufferers. No arrangements had been made for their fodder or medical aid. In the absence of other food materials, the seed stock of the farmers was being depleted.

### Urge for Better Farming

#### Survey of a Punjab Village

THERE is a great urge for development amongst the people of village Ferozeshah, who are keen to adopt better methods of cultivation and use improved varieties of seeds. However they are handicapped by their water-logged lands and the non-availability of quality seeds and proper guidance. These are some of the findings of the Planning Forum of the R.S.D. College, Ferozepur, Punjab, which made a socio-economic survey of the village.

A part of the community development block in the area and about 15 kms. from Ferozepur city, Ferozeshah has a population of two thousand. Agriculture is the main occupation of the people though it is chiefly rain-fed. The problem of water-logging is acute and has yet to be solved. There are 15 tubewells in the village. The major crops grown are wheat and cotton out of which the latter is more remunerative.

About 60 per cent of the villagers own their lands. Out of these, about 20 per cent constitute

big landlords, having more than 15 acres of land each.

The general outlook of the village is not very heartening. This is probably due to the low per capita income of the people, which ranges between Rs. 200 to Rs. 300 per year. Nearly 20 per cent of the people are unemployed, and about 30 per cent are seasonally employed. Due to bad drainage, outbreak of malaria and influenza has become a frequent occurrence.

Though the village has its own hospital with good maternity benefits, quite a few people complained about the non-availability of standard medicines. There is on the whole an awareness of the need for small families amongst the residents of this village, but this has remained untapped due to the lack of medical provisions and guidance.

Linked both by road and rail, the village enjoys the facility of electricity. Out of 350 houses more than 100 are electrified. Cart and camel are the local means of transportation. About 10 per cent of them also use tractor-trolleys for transporting their produce to *Mandies*.

Ferozeshah has its own higher secondary school. However, most of the parents of the school-children were dissatisfied with the behaviour of the school teachers.

There is also a Joint Credit Co-operative Society in the village, but its working has not been very satisfactory. The chief reasons for this are its seasonal character, large rates of interest and the complicated process of loan procurement.

#### STERILISATION AND LOOP

The number of loop wearers and sterilised persons in the country has been steadily increasing day by day. So far 2,410,000 loop insertions have been made. For carrying out this programme there are 3,695 stationary and 363 mobile units.

The number of sterilisations has gone up to 4,300,011.

Pilot projects in oral contraception have also been making headway. They number 118.

More than 230 medical and about 200 para-medical personnel have been trained in methods of oral contraception.

## PAN-SHOP MAKES A LUCRATIVE BUSINESS

### A Survey of Pan-shops of Visakhapatnam

A pan-bidi shop fetches more income than a white-collar job. On an average, a panwala earns Rs. 9-10 a day. This is the finding of a private survey of pan-shopwalas of Visakhapatnam (in Andhra Pradesh) conducted by a staff member of the Agro-Economic Research Centre, Waltair.

A pan-shop is an important servicing centre and its need is felt everyday by everybody, whether rich or poor. A keen competition exists among the panwalas, and at least two or three shops are located at every corner of a street. The difference between any two shops, if any, is only in the preparation of pan as it involves personal skill in mixing the ingredients. And this is restricted exclusively to the shops in the residential areas as discerning consumers show preference between one shop and another.

The location of the shop is the main factor in determining the income as well as hours of business. For example, shops near cinema houses earn Rs. 10-15 a day and their peak hours of business are usually the show timings. Brisk sales take place at the time of intermissions and the articles demanded are betel, cigarettes, toffee, and cold drinks.

Shops at the railway stations have round the clock business and, as a consequence, their income goes up to Rs. 20 a day. Shops in the vicinity of factories, colleges, and offices make Rs. 10-15 a day, whereas those at parks, amusement centres and residential areas earn about Rs. 10. Shops near popular hotels and restaurants earn between Rs. 8 to 15 a day, except on holidays.

Commission on the sale of articles forms the main part of income for the pan-shops. Hence

day-to-day investment of capital is practically nil. Sales agents of the different articles come to the shops in the evening to distribute the articles. Money is collected by them the next evening after deducting the commission on the sales. The commission rates are high for bananas and cold drinks—Rs. 2 for 100 bananas and one rupee on a dozen bottles of cold drinks. Bidis and cigarettes come next in order. The usual practice is to buy tobacco and roll the leaves into cigars, thus making a profit of Rs. 1.50 a day. On the sale of readymade cigars, the commission is one paise per cigar. Shops in the residential areas earn about one rupee a day as commission on the sale of cigarettes, whereas shops near factories, colleges and offices get Rs. 2 to Rs. 3 a day.

Of course, betel is the mainstay of every shop. On each betel, a profit of 2 paise is made, whatever the quality of pan or quantity of ingredients put in. Thus, on the whole, each pan-shop gets at least Rs. 10 per day.

A. G. Prasad

## MYSORE HAS FEWER BIRTHS

An analysis of the number of confinement cases in the Cheluramba Hospital, Mysore, during the last three years shows that the births in Mysore City are on the decline. In 1965, the number of births reported was 4965. It came down to 4438 in 1966 and further down 4050 in 1967.

This can be attributed to the growing awareness of various birth control measures among the couples of productive age group, as some statistics collected go to prove.

In 1965, the number of women who had sterilisation operations in the Cheluramba Hospital was 127. The number went up to 134 in 1964 and reached 1216 in 1967. As against 93 men who had vasectomy operations in 1966, the number increased to 321 in 1967.

## TWO ENGINEER INVENTORS

### N. P. NAIK'S Welding Positioner

Among the recipients of this year's award by the Inventions Promotion Board of the Government of India were Mr. N.P. Naik, Special Engineer, and Mr. N.N. Rao, Assistant Superintendent Shops, in the Tata Iron and Steel Co. (TISCO). Each one of them got a cash award of Rs. 3,000 for skillful work. While Mr. Naik got it for his ingenious device for hard surfacing of the cast bells used in the Blast Furnaces, Mr. Rao won it for two of his machines—a multi-purpose hydraulic surface grinding machine for internal and external grinding, and a portable tool for machining the mill housing windows.

It may be recalled that the Inventions Promotion Board awards cash grants ranging from Rs. 500 to 10,000, twice a year—one on the Republic Day and the other on the Independence Day—to artisans, technicians, scientists, technologists, engineers and individuals from all walks of life for outstanding achievements. Mr. Naik and Mr. Rao were among the 23 selected for the Republic Day awards.

Mr. Naik's machine is a welding positioner. It is used for hard surfacing of the large and small bells and hopper lips of the blast furnace. It provides a complete automatic set-up for bell rotation based on the friction drive principle and has transverse movement of the welding head and adjustment of the bell rotation to maintain a constant welding speed on the conical surfaces of work pieces. The design of the machine is a remarkable feat.

Fifty-year old Mr. Naik is an engineering graduate from the University of Bombay and joined the Tata Steel in 1942 as a graduate trainee. Over the years, he held many assignments and worked in various capacities. Last year, he visited Japan and Czechoslovakia to familiarise himself with developments in the machine tool industry in these countries.

### N. N. RAO'S

### Surface Grinding Machine & Portable Machine Tool

Mr. Rao's hydraulic surface grinding machine and portable machine tool also show great skill and ingenuity. The former, operated by a single motor, can accomplish external grinding up to a length of 8 inches, and diameter grinding from 1 to 6 inches. His portable machine tool, a sturdy fast operating and consistently accurate device, has two cutting heads with three speeds, two feeds and one rapid motion for transverse movement, reversible up to 32 inches and is capable of maintaining the central line and parallelism of the machined surfaces while simultaneously cutting both the sides of the window of a mill housing.

Fifty-one year old, Mr. Rao holds a diploma in mechanical and electrical engineering from the Municipal Technical Institute in Masulipatnam. He joined the Tata Steel in 1939 as a fitter but subsequently became the Assistant Foreman, Production Planner and Machine Tool Engineer.

### BARAUNI MAKES NEW RECORD

The processing of crude oil in Barauni Refinery broke all previous records and touched a new high—1,80,478 tonnes in May last. It was for the first time since the commissioning of the Refinery that such quantity of crude oil was processed in one single month.

During the same month, the Refinery established yet another record by despatch of 1,40,939 tonnes of its 13 petroleum products.

## HEL's New Products

Heavy Electricals, Bhopal, has started the production of Butterfly Valves. A number of orders for various types of these valves are on hand. The orders include turbine inlet valves for different power stations such as Chibro, Khodri, Koyna, Ramganga, Pong, and penstock hill-top valves for Dehar. Besides, HEL has orders and enquiries for cooling water valves for a number of thermal power stations.

To meet the demands of Indian Railways for higher speeds and more hauling capacities, new designs of electrical equipment have been developed at Bhopal. Some of the recently introduced ones are:

Traction Motor Type TM4939 AZ for hauling long trains on the steep gradients of the Bombay region. Six of such motors mounted in a 1,500V d.c., locomotive can develop 4,200 h.p. and are capable of hauling 3,660 tonnes of train load on level track at a speed of 80 km/h.

Traction Generator Type TG 10919AZ to meet the operating requirements of 1,380/1,245 h.p. metre-gauge diesel electric locomotives. This generator is continuously rated at 460V, 1,740A at 1,100 rpm and is designed to suit the three-field excitation system of matching generator/diesel engine characteristics.

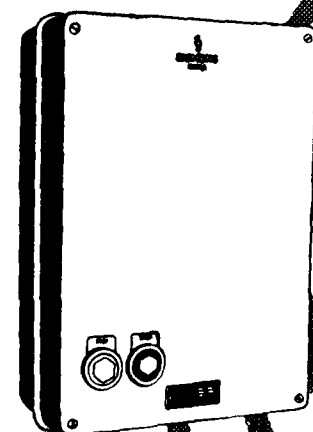
Traction Generator Type 10931 AZ to facilitate the weak field operation of 2,600/2,400 h.p. broad gauge diesel electric locomotives. HEL developed this generator with a higher continuous rating of 750V with 2,250 A at 1,000 rpm.

Driving Motor for Motor Alternator Set—a new auxiliary motor type AY 100AZ for driving a 180 KVA 420 V a.c. 3-phase alternator used as a source of supply for auxiliary machines on 1,500V d.c. locomotives. With further modifications this machine can be used as a standard d.c. motor generator for different applications.

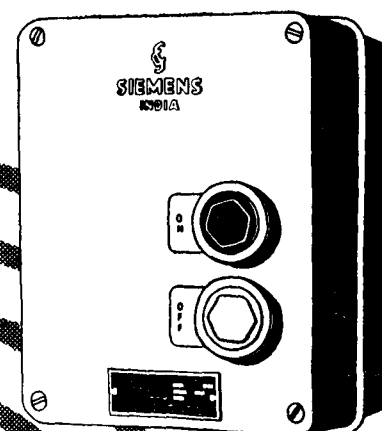
Inductor Alternator to replace a d.c. generator used as an exciter for 1,380/1,245 h.p. metre gauge DE locomotives.

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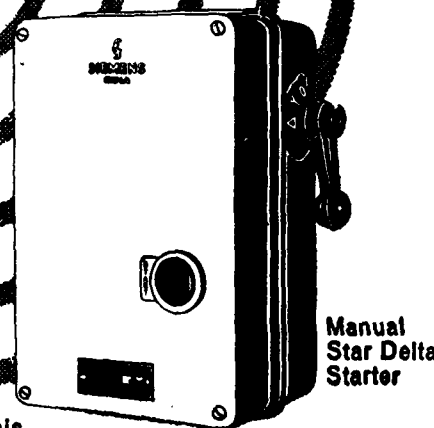
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## Development Diary

● India and Sudan have signed a trade agreement in Khartoum, under which the two countries will exchange goods worth Rs. 1.80 crore. India will import from Sudan long staple cotton and export to that country oil, textiles, agricultural implements and manufactured goods.

● The Central Rice Research Institute, Cuttack, has found cheap substitutes for lime and gypsum as antidotes for soil acidity and salinity. Thus more lime and gypsum will be available as raw materials for cement, steel and fertiliser.

● The fourth unit of the Satpura Thermal Power Station in Betul district in Madhya Pradesh has gone into operation. The station, a joint undertaking of Madhya Pradesh and Rajasthan, is being erected with American assistance at an estimated cost of Rs. 36 crore.

● India has begun exporting green tea. Initially it will supply 1,000 kg. valued at Rs. 1.33 lakh to Morocco. India produces a total of 5,000 tonnes of green tea.

● The Central Government has sanctioned a short term loan of Rs. 6 crore to Maharashtra Government for distribution of high-yielding seeds, fertilisers and pesticides to farmers.

● The UNDP and India have signed a plan of operation of the National Apprenticeship Scheme. Out of the total cost of the five-year project, which is more than 7 million dollars (Rs. 5.25 crore), India will contribute more than 6 million dollars in rupees for professional staff, equipment and supplies. The UNDP will provide foreign exchange for experts, equipment and fellowships. Under the project, UNDP and ILO will help India to set up Central Technical Services and four regional apprenticeship headquarters at Kanpur, Calcutta, Bombay and Madras.

● The Hindustan Photo Films, a public sector undertaking for the manufacture of photograph materials, will produce films worth Rs. 4.5 crore during the current year. The company has already received an order for films from Ceylon.

● India will get Rs. 47 crore from West Germany as credit for import of goods, including fertilisers.

● India has signed a 10-year agreement with a West German firm for technical assistance in the manufacture of diesel engines.

● The Indian Motion Pictures Export Corporation has signed an agreement with the Kenya Film Corporation, under which the Indian Corporation will train Kenyans in film-making.

● Under an agreement between India and Yugoslavia, the Indian Drugs and Pharmaceuticals Ltd. will supply six tons of penicillin to Yugoslavia.

● USAID has signed an agreement with India for providing a loan of \$23 million (Rs 17.25 crore) to India for fertiliser imports. This loan forms a part of U.S. support for India's drive to attain food self-sufficiency.

● The United States Government has authorised loans totalling Rs 7.86 crore to four Indian firms for increased production of lubricating oils, chemicals, pharmaceuticals and some other items.

● The first galvanising line of the Rourkela Steel Plant—a part of its 1.8 million tonnes expansion programme—has been commissioned.

● The first cross-country pipeline designed in the country and laid by

Indian engineers, using indigenous materials, has been commissioned at Lakwa in Assam. This 17.5 km. line which connects the Oil and Natural Gas Commission's oilfields at Lakwa with Oil India's pipeline at Moran will facilitate the supply of crude oil to refineries at Gauhati and Barauni.

● The coking unit of the Barauni Refinery ran continuously for 105 days before it was temporarily shut down for maintenance work. This is the longest record run not only for Barauni but for all the public sector refineries in India.

● Himachal Pradesh has had a record rabi production of over four lakh tonnes this year as against two lakh tonnes last year. This is 20 per cent more than the State's best harvest so far.

● The Centre has sanctioned a loan of Rs 93 lakh to Madras for the development of tea plantations in the Nilgiris. The loan, to be used over a period of nine years, is intended to help rehabilitate 400 repatriate families from Ceylon.

● Another H.S.—748 plane, manufactured by the Hindustan Aeronautics, Kanpur, has been handed over to the Indian Airlines Corporation.

● The first set of Hindi teleprinters produced at the Hindustan Teleprinters Ltd., Bangalore, have been released. The H.T.L. is expected to produce 800 such teleprinters during the year.

● Construction of a new unit, designed to raise the capacity of the Barauni refinery to 3 million tonnes, has been completed.

● India has started exporting rayon tyre yarn—a highly competitive item in the international market—to Poland. The export of this yarn this year is expected to be 2,000 tonnes.

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## in machine tools

India now ranks eleventh in the world in machine tool production.

Machine tool production in the country has been rising at a galloping pace after the end of the First Plan. The production of machine tools which was worth about one crore rupees in 1956 rose to about Rs 30 crore in 1967, thus achieving the Third Plan target.

The ratio of indigenous production to imports has been definitely rising gradually from year to year, from 28 per cent in 1960 to 69 per cent in 1966.

Today there are about 1,000 small-scale units producing machine tools valued at Rs 4 crore annually.

In 1957, there were 344 small-scale units as against 23 large scale units manufacturing tools in the country.

The first state-owned unit, the Hindustan Machine Tools Ltd., popularly known as HMT, has played a significant role in the country's industrialisation. In the last 12 years, beginning with the production of the first lathe in 1954, it has grown into one of the world's largest industries producing highly sophisticated machine tools. HMT was originally planned for a capacity of 1,200 machine tools a year. Since then, HMT has set up one additional unit in Bangalore, and one each in Pinjore, Kalamassery and Hyderabad,

each with a capacity of 1,000. The actual production of these units in 1965 was nearly worth Rs 10 crore. HMT's production was mostly of the Bangalore and Pinjore units.

HMT has taken the recent recession as a challenge to its very existence. Efforts are being continually made to diversify its production lines in its factories at Bangalore, Pinjore, Kalamassery and Hyderabad and to accelerate the export of its products.

Until March this year, a total of 15,659 HMT machines were at work in India. HMT has exported 274 machines to New Zealand, Australia, Czechoslovakia, Poland, Nigeria, Switzerland, U.S.S.R., West Germany, East Germany, France, Bulgaria, Hungary and the United States.

In 12 years the production in the private sector, which consisted of more than 40 units, expanded from Rs 50 lakh to over Rs 12 crore.

The small-scale sector of machine tools industry has made rapid progress during the decade. According to a survey undertaken by the National Council of Applied Economic Research, nearly 91 per cent of the total number of machines available in the country in 1963 were supplied by the small scale units.

About 50 small units are functioning in one of the industrial estates set up by the HMT at Bangalore.

The National Small Industries Corporation, set up by the Government, provided improved machinery for the manufacture of machine tools to these units under the hire-purchase scheme. Other production facilities like raw materials and components, power and finance were also augmented in supply to these units.

The government is organising a census on a wide scale to cover all the machine tool user industries in the country.

There is wide scope for the export of Indian machines to both developing and developed countries. Even the advanced countries in Europe, America and Canada have been importing between 10 to 15 per cent of their requirements of machine tools. The extent of the potential for the export market can be gauged from the estimated world demand which is likely to be Rs 4750 crore by 1970.

Engineering exports during 1967-68 totalled Rs 370 million (pre-devaluation) recording an increase of 28 per cent over those of 1966-67 valued at Rs 290 million (pre-devaluation).

V.M. SOORMA





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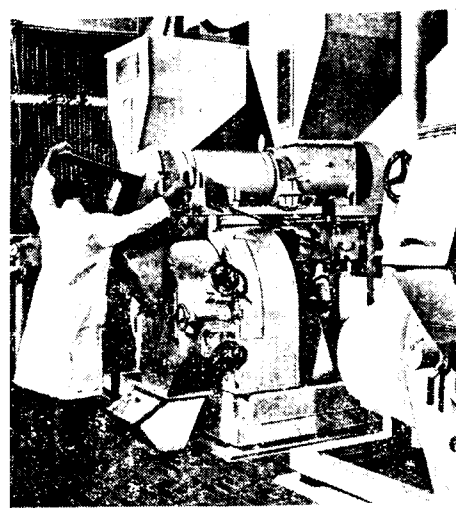
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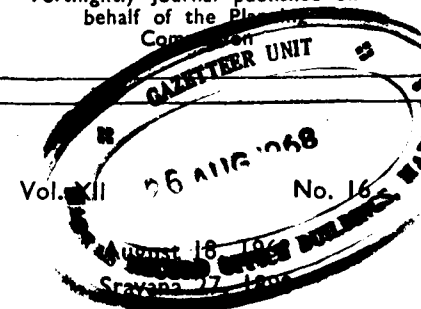
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# YOJANA

Fortnightly Journal published on behalf of the Planning Commission



## LEST WE FORGET

There is a necessary inter-connection between the growth of science and technology as a general movement and the ethos of society. Much of what is called tradition in our country is no more than a fossilisation of thought and habit.

—Indira Gandhi

Cover designed by Jivan Adalja

Yojana seeks to carry the message of the Plan, but it is not restricted to expressing the official point of view.

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Saradindu Sanyal

Assistant Editors:  
Madhav Krishna Pardhy  
Rosscoote Krishna Pillai

Photographic Officer:  
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## SCIENTIST AND THE NATION

THE 25th anniversary of the Council of Scientific and Industrial Research has spotlighted the role of science and technology in the economic development of India. It is now accepted throughout the world that advancement in science and technology is a necessary pre-condition for national development, even though it may not always be easily discernible or actually evident. The scientist working in the obscurity and oblivion of his laboratory does not, therefore, get much credit for his work; nor do his achievements always attract public attention. It is this anonymity which often creates the impression that scientists are not playing an effective role in national development. Indeed, many of the misconceptions about the actual functions and performances of our National Laboratories and a great deal of criticism of C.S.I.R. flows from the fact that in this battle for progress, the scientist is the "unknown soldier".

Elsewhere in this issue, an attempt has been made to project the achievements of C.S.I.R. in concrete terms. For the common man, the main thing is the contribution of science to national development, which can be measured in concrete terms. One would like to know, for instance, the relation between the expenditure on research and development and the growth in economic productivity. To answer this question, one way or the other, would be an oversimplification. The important thing to remember is that all research activity does not produce equally viable economic results, nor does it follow that the most technologically advanced country makes the most substantial gains in matters of development.

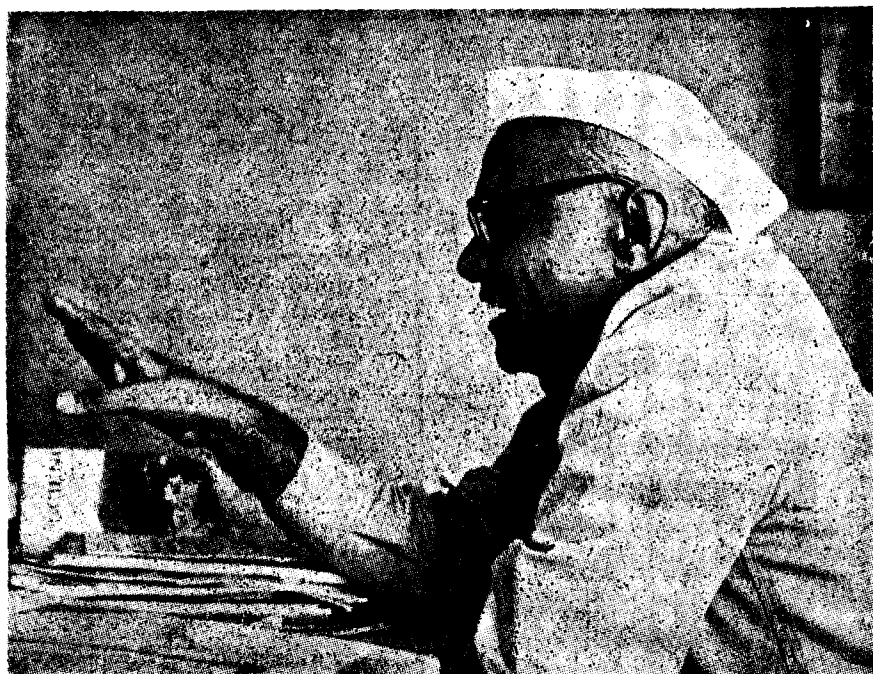
The measure of economic growth or increased production from investment in scientific research depends on a number of factors. This also depends on the emphasis on research, either on projects which have a great deal of prestige value or relate to basic work, and research actually oriented towards economic growth. The returns from investments on scientific research and development can be comparatively large when a country utilises, applies and adapts research methods and techniques already known and developed in more advanced countries. Besides the technological level, the economic maturity of a country will largely determine the opportunities and the needs for research and development. The expenditure on research cannot possibly yield economic returns unless the results achieved are applied to various sectors of the economy, either in industry or agriculture.

The national laboratories in India are playing a role in this direction, but their effective performance would largely depend on the degree and measure of importance attached to their work and the extent to which the fruits of research are utilised by agriculture and industry. It is important to reiterate the role of scientific research for development and to plan priorities so that the maximum benefit can be derived from the scientific research in promoting the economic health of the nation.

In assessing the usefulness or otherwise of the national laboratories, it is important to remember that the scientist must be given the respect and position that is due to him in the nation's life. As a distinguished American has put it, "The wealth of a nation consists more than anything else in the superior men it harbours." This is more relevant today than at any time before. The community has to accept this maxim in order to ensure that scientists play an effective role in the future economic well-being of the country.

Cover shows work at the Cauvery Delta for assessing its groundwater potential. It is a United Nations Project. See pages (16-19)

# Two-way traffic between industry and research essential,



Photograph : YOJANA

Dr Atma Ram  
Talks to  
Yojana

*From Research to Production there are several stages. Steel Plants do not come up merely because there is a metallurgical laboratory. Criticism about our national laboratories is uninformed.*

## says C.S.I.R. Chief

"INDUSTRIAL research takes a little time to bear fruit." This was the burden of an hour long interview that we had with Dr Atma Ram, the Director General of C.S.I.R., on the working of the organisation in the last twenty-five years. When Yojana asked him to single out the biggest achievement of the organisation, he said he wouldn't like to do so but listed out for us quite a few of them: the Fuel Research Institute's work on the blending of coking coal by which our steel plants are able to make use of inferior quality coal and the making of fertiliser from coal; the Glass Research Institute's optical glass production; the Food Technological Research Institute's baby food; the National Chemical Laboratory's search for new chemicals; the new drugs made by the Drug Research Institute under clinical trial, and so on.

But all these achievements would not cut much ice with the public among whom, according to Dr Atma Ram, prevailed a great deal of misunderstanding about

what a research laboratory was expected to do. And that, he said, explained the criticism that the national laboratories had not done as much as they were expected to do.

The results produced by a research laboratory were only ideas and all ideas would not lead to production. As Dr Atma Ram tellingly put it, "steel plants wouldn't start coming up merely because we have a metallurgical laboratory". The work of scientists provided the basis for industries and one of the first things for a country bent upon industrialisation was to have basic information of resources.

Research and development should go together, as he put it. It was wrong to lay the blame at the doorstep of the national laboratories and research institutes if their work had not borne fruit or had not materialised into industries. In between the result of a laboratory's work and its ultimate translation into production, or, as Dr Atma Ram said, "before an idea goes to produce cash and give dividends", there were several stages, like pilot plants, import of machinery,

marketing research, and so on. In the course of this translation, some ideas would fall by the wayside, being unworkable and some would have to wait for the future when they might be workable. It all depended on their technological and economic feasibility. And whatever the laboratories might do, there should be two things, according to the C.S.I.R. chief, for industries to grow on the basis of research: a force of compelling circumstances or a sense of competition. Dr Atma Ram pointed to the growth of industries during the last world war.

## ASSOCIATE ENTREPRENEUR WITH DEVELOPMENT

Asked as to what steps he would propose to induce industry to try out the processes and patents worked out by C.S.I.R. laboratories, Dr Atma Ram said that industry and the entrepreneur should be associated with development earlier. They should be brought into the laboratories' field of activities earlier, as he put it. The Director General wanted prospective entrepreneurs who were willing to utilise the results of indigenous research rather than depend on foreign know-how to be given certain advantages over others, if not preferential treatment. For instance, if they wanted some machinery from abroad or raw material and things of that kind, he would like them to be given all assistance by the Ministry of Industry.

## ▲ WRONG NOTION OF FOREIGN KNOW-HOW

The idea of importing machinery or even know-how is not anathema to Dr Atma Ram. In fact he is keen to remove the notion among some people that a country which is politically independent should also be technologically independent. "This is a wrong conception," he emphasised. "It is all the overtone of politics. It is wrong to think that since we have research laboratories, we do not require any foreign know-how." He cited the instance of America, which paid nearly six to seven million dollars to other nations as royalty on know-how, although there was no dearth of research. "For that matter, all countries pay more by way of royalties, fees and so on than they get", Dr Atma Ram added. Of course he wanted a judicious choice to be made in selecting technologies from abroad. He quoted once again his already well-known saying that we should not borrow to continue borrowing and we should aim at excellence in relevant fields. According to him "areas of felt needs", which others have not touched, should have greater attention in our country's research. He gave us a typical example of an area of felt need. The glass bangle industry in Firozabad in U.P. was starved of an imported material for producing red bangles. The industry produced Rs 4.5 crore worth of goods. This was an industry peculiar to India and perhaps Pakistan. Nobody abroad would be interested in this problem. But this was an important field of applied research for the Glass Research Institute which had worked on the fundamentals of colouring glass. The Institute took up the problem and succeeded in producing red glass without using any imported colouring ingredient.

## FUNDAMENTAL AND APPLIED

To our question whether he would agree to cut down expenditure on research other than in areas of felt needs, Dr Atma Ram replied that he was for some order of priorities. Research was expensive and no country could afford to give all the facilities that the large number of scientists engaged in research would like to have for their work. There should be some urgency and priority for certain fields. In a developing country, applied research should take precedence over fundamental research. He said it was wrong to stop all basic research because for understanding science it was necessary. But in a country aiming at self-reliance, applied research should have pride of place. Dr Atma Ram seemed to be sore on the neglect of applied research. He said "We have not given recognition to people doing applied research. We consider them second-rate with the result everybody claims that he is doing fundamental research". Wouldn't it be thrilling if you could increase productivity by a process, he asked.

The C.S.I.R. Chief was critical of industries in this regard. He pointed out that some of the industries in which we had near-monopoly had not cared to improve their products by the application of science. Tea, for instance. "Why haven't our scientists bothered about research on tea at all?" he asked. "Tea research is done in other countries. Why?" Jute, again, is an indigenous area.

He was for encouraging more and more research being done in the industries themselves instead of in C.S.I.R. laboratories. Thereby there was a better chance of utilisation of results. C.S.I.R. was giving 50 per cent grants to the various co-operative research organisations of industries in Ahmedabad, Coimbatore, Bombay and other places. And by way of encouraging research in industry, the Union Ministry of Finance offered a rebate on tax up to the extent of 30 per cent of the money spent on capital in scientific research. But Dr Atma Ram regretted that industries had not taken advantage of these incentives. They were, of course, slowly realising the need for setting up nuclei of research within themselves and, in course of time, Dr Atma Ram believes, there would be a two-way traffic between research and industry.

Asked if he would agree with the view that scientists should come down from their olympian heights to bring maximum benefits to the country, the Director General of Scientific Research counter-posed: "Why should they alone come down? Why shouldn't the people who need them go to them? If contact between A and B would do good, they should come together."

## GREATER AWARENESS OF SCIENCE

The C.S.I.R. Chief was sceptical about the scope of spreading scientific knowledge among the masses. "Everybody can't become a scientist", he said. But he was keen that there should be a greater awareness

turn to PAGE 10



## The Challenge

More food from India's arable land for the country's rapidly growing population. This is the most vital and urgent national task today. A challenge to our ability and aspirations.

This challenge must be met. How? By the application of scientific farming techniques which are tried and tested. Spectacular increases of crops can be attained by the use of advanced farming methods: improved seeds, adequate fertilizers and suitable machines.

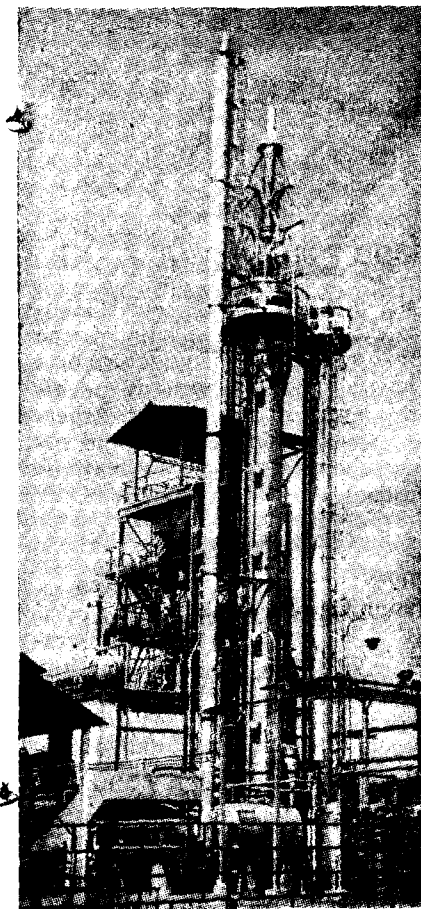
TAFE, the largest manufacturer of modern agricultural tractors and implements in India, is helping meet the challenge.

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## Twenty-Five Years of CSIR



industrial productivity and in some cases have also improved the quality of industrial products.

As an assessment of their contributions to industrial development in precise quantitative terms is difficult, an attempt has been made in this article to describe briefly some of the projects, the impact of which on industrial development and social life is discernible.

Take for example coal which is among the primary fuels and provides a major source of energy for industry. As a result of the surveys conducted by scientists of the Central Fuel Research Institute, new resour-

*Thirty National Laboratories and Research Institutes Develop Processes that have helped in setting up Major Industries*

## LANDMARKS OF ORGANISED SCIENCE IN INDIA

### A JUBILEE SURVEY

P.L. JAISWAL

Chief Publicity Officer, C.S.I.R.

THE Council of Scientific and Industrial Research has completed 25 years. It was set up in 1942, particularly to mobilise the country's resources for producing essential war supplies. After Independence the Council was converted into a national organisation charged with the functions of promoting, guiding and co-ordinating scientific and industrial research in the country.

In the years that followed, the

country witnessed an upsurge of science and technology which manifested itself in the establishment of a chain of national laboratories for carrying out studies on problems of interest to different industries. The National Chemical Laboratory and the National Physical Laboratory came into existence in 1950 and by the end of the Third Plan, 30 National Laboratories/Institutes had been established by the Council.

These laboratories have carried out pioneering work in the development of technological knowledge for utilising the vast resources of the country. The services rendered by them in investigation and research on indigenous raw materials and adaptation of processes to Indian conditions have helped in the establishment of major industries in the country. They have developed processes which have added to

ces of coking and blendable coals with a capacity of more than 750 million tonnes have been located.

A special process worked out for coal washing has led to the construction of beneficiation plants valued at over Rs. 70 crore by the end of the Third Plan with a capacity of cleaning nearly 30 million tonnes of coal per annum.

India has vast resources of iron ore but the reserves of prime coking coal required for reduction of the ore in blast furnace is less than 2 per cent of the total reserve of coal. Investigations conducted at the Central Fuel Research Institute have proved that coking and non-coking coals can be blended for metallurgical purposes for feeding the country's blast furnaces. Practically all the coal blends now used in public sector steel plants, metallurgical ovens and merchant ovens in the coun-

try, often employing 50 to 60 per cent non-standard coking coals, were selected on the basis of experiments carried out by the Institute. As a result of its work the expansion programme of Indian iron and steel industry will no longer be inhibited by the shortage of metallurgical coke.

The Institute has also developed a nitrogenous fertiliser from coal which is also a good soil conditioner. This process has not only the potential of finding new and large markets for low-rank coals, but may bring a near revolution in soil fertilisation.

### UPGRADED IRON

Minerals do not always occur in nature as sufficiently rich deposits that could be mined and utilised directly. They are invariably associated with worthless and sometimes deleterious gangue which has to be removed.

Methods have been developed at the National Metallurgical Laboratory, Jamshedpur, to upgrade the minerals to required specifications. Based on the work on beneficiation of iron ores done at NML, heavy industrial complexes, both in public and private sectors, are establishing their iron ore beneficiation and sintering plants.

### Pig Iron

Smelting trials conducted in the 15 tonnes per day low-shaft furnace pilot plant at NML have shown that foundry grade pig iron can be successfully produced from sub-standard raw materials utilising non-coking coals for reduction purposes, plentiful supplies of which exists in the country. On the basis of trials conducted with regional raw materials, the production of foundry grades of pig iron is now well on its way at suitable locations in Andhra Pradesh, Punjab, Maharashtra and Rajasthan.

### Substitute Alloys

A number of substitute alloys, such as the nickel-free austenitic stainless steel which is almost equivalent to the imported standard 18/8 stainless steel and the aluminium magnesium alloys used for minting 3, 2 and 1 paise coins have also been developed by the Laboratory.

Making of optical glass is a difficult and sophisticated process and is a guarded secret of about half

a dozen countries in the world. The production of this highly strategic material by scientists of Central Glass and Ceramic Research Institute is a triumph of Indian technology. (See *Yojana* of Feb. 5, 1967.) Optical glass is used for lenses and prisms in optical instruments employed in warfare. The optical glass plant at the Institute, which has been in production since 1961, is now meeting the entire requirements of both defence and civilian sectors in respect of all major types of optical glass. This has not only resulted in foreign exchange saving but also made the country independent of import of this strategic material. The development of optical glass has also opened up opportunities for stabilising optical instruments industry in the country.

- New resources of coking coal to the extent of 750 million tonnes located.
- Problem of metallurgical coal no longer inhibits growth of iron and steel industry.
- A nitrogenous fertiliser has been developed from coal.
- Beneficiation process of low-grade iron ore has led to several big plants.
- Optical glass plant meets all the needs for the strategic material.
- Multipurpose food and baby food to ward off protein deficiency have been prepared.
- Designs for water treatment plants drawn up.
- Several chemicals to fight diseases synthesised.
- Cheap building materials produced from industrial wastes.
- A number of machines and mechanical structures fabricated.
- Know-how for producing TV sets supplied to industry.

The Institute has also developed special periscope prisms for armoured tanks, special glass films for use in locating and firing devices, night patrolling quartz monocrystals for use in telecommunication and electronics industry, high temperature protective enamels for aero-engines and atomic radiation shielding glass slabs—all of great strategic importance.

### FOOD FOR MAN AND PLANT

Scientists in our chemical laboratories have made available the know-how for the manufacture of a variety of products, such as plasticizers, anti-corrosion paints, thermistors, bleaching earths, and organic chemicals used in various industries.

### Vitamin C

The technique of production of Vitamin C from glucose developed by the National Chemical Laboratory is now being exploited by the Hindustan Antibiotics Ltd., Pimpri, which has planned for the production of 125 tonnes of Vitamin C a year valued at Rs 95 lakh. The NCL has also helped in modernising and rationalising alkaloid extraction from Indian opium. A government factory is being set up at Neemuch, with an anticipated production capacity of 4.7 tonnes of morphine valued at Rs 1 crore.

### Potash for Fertilisers

There are no large scale potash deposits in India and the country imports large quantities of potash fertilisers every year for augmenting its food production. In view of this, the production of potassium chloride and potassium sulphate from sea bittern by the Central Salt and Marine Chemicals Research Institute, Bhavnagar, is a significant achievement.

A semi-commercial plant has been set up by the Institute at Kandla with a capacity of 3 tonnes of potassium chloride and 6 tonnes of epsom salt a day and two more units are being set up at Bhavnagar and Tuticorin.

Food is another field in which remarkable work has been done by the CSIR laboratories. The protein inadequacy of our food is particularly severe in rapidly growing



Side-blown basic converter for making steel, designed and fabricated at the National Metallurgical Laboratory

children whose protein requirements are higher than those of adults and in case of expectant and nursing women. To combat protein malnutrition, the Central Food Technological Research Institute, (CFTRI), Mysore, has developed a variety of protein-rich foods, some of which are now produced on a commercial scale.

### Multi-purpose Food

Prepared from specially processed groundnut flour and roasted Bengal gram flour and fortified with vitamins and minerals, it is a versatile supplementary food which can be incorporated into diets to make up protein deficiencies. It is now produced in Mysore and Coimbatore and used in the mid-day meal programme in schools. Two more plants, one at Sitapur (U.P.) and the other at Calcutta, are being set up shortly.

### Baby Food

India was importing, till recently, baby foods based on cow's milk to meet her requirements. Experiments at CFTRI established the feasibility of production of high quality baby food from buffalo milk. The

importance of this process can be gauged from the fact that about 70 per cent of milk produced in India is that of buffalo and till recently the use of buffalo milk for the production of easily digestible milk powder suitable for infants was not considered practicable. Based on the CFTRI process, the Kaira District Co-operative Milk Producers' Union Ltd., Anand, has been producing this baby food since 1960 on a large scale under the trade name "Amul Baby Food."

### Food Conservation

Though India produces sufficient food, a sizeable part of it is lost during storage and distribution. For prevention of spoilage of foodgrains in commercial godowns, the Durofume process, developed at CFTRI, has proved to be most economic and effective and it is now being used by several firms and also government organisations. The Institute has also developed portable equipment required for insect proofing of gunny bags meant for storage of foodgrains. The cost of insect-proofing based on indigenously

available chemicals has been worked out at 10 paise per bag.

CSIR Laboratories have also done commendable work in the fields of public health and medicine. The Central Public Health Engineering Research Institute, Nagpur, has standardised type designs for medium-size water treatment plants suitable for small communities. A water treatment plant with a capacity of 3.5 lakh gallons per day is being put up at Vikarabad, near Hyderabad, based on the Institute design. For purification of water in medium-sized wells, the Institute has devised a double-pot system using bleaching powder. A chloride dispenser has been perfected for use in rural wells.

The Institute has developed (i) three units of pressure filters with a capacity of 1000 gallons/hour and (ii) demineralising-cum-water purifying cartridges for defence.

The treatment of raw sewage and industrial wastes by oxidation pond method developed by the Institute has been found to be very economic for towns having populations of 5,000 to 20,000.

### Cholera Control

Studies carried out at the Indian Institute of Experimental Medicine, Calcutta, have led to the development of a cholera phage-typing technique which has helped in establishing the existence of three endemic foci of classical cholera in India and mapping out the routes of inter-State spread of cholera from these foci. The phage-typing tests have also shown that in 1966 all cholera epidemics in the country were caused by El Tor vibrios.

The Institute has developed a live oral cholera vaccine using some El Tor vibrio strains isolated from areas free from El Tor cholera. Vaccines prepared from these strains have satisfied the necessary laboratory tests and have also been found to be safe for use in a limited series of tests on human beings.

### Drugs

Thousands of chemical compounds have been synthesised for obtaining anti-tubercular, anti-leprosy, anti-thyroid, anti-diabetic, anti-viral and anti-fertility agents and are being tested by the scientists of the Central Drug Research Institute, Lucknow. The Institute has already developed *Psoralen*—a

dermal photo-sensitising agent which may find use in the treatment of leucoderma, hayatin menthiodine, a muscle relaxing drug used as an adjunct to anaesthesia, and anti-thyroid and anthelmintic agents. Diosgenin developed from Dioscorea tubers by the Regional Research Laboratory, Jammu, has been found extremely useful in the synthesis of steroidal hormones and oral contraceptives.

### CHEAPER HOUSES TOO

In the matter of housing too, CSIR has made significant contribution. Cheap building materials from locally available raw materials and industrial wastes have been developed by the Central Building Research Institute, Roorkee. Fly ash produced as an industrial waste from thermal power stations has been found as a good puzzolanic replacement in cement and can safely replace up to 20 per cent normal portland cement by weight. The Institute scientists have also found that Indian amphibole asbestos which is available in plenty in the country, can be used as a part replacement of the chrysotile asbestos at present imported. Quality bricks have been produced from black cotton soils which do not produce good bricks. The process is being exploited by the Madhya Pradesh Housing Board for production of better bricks.

'Funicular Shell', a new type of shell roof has been developed by scientists of the Structural Engineering Research Centre, Roorkee. The shells require minimum steel for reinforcement and have a wide application for roofing residential buildings and industrial warehouses.

Research conducted at the Central Leather Research Institute, Madras, has been extremely useful for the leather industry. The hide of buffalo unlike that of cow has hitherto been processed only for heavy leathers, that is, sole, belting, and industrial leathers. Its coarse grain has stood in the way of it being exploited for the manufacture of light leathers. The Institute has evolved a new tanning and leather curing process by which buffalo hide can be suitably processed and used for the manufacture of light leathers, like shoe-uppers, case and baggage leathers, chamois and lining leather. A process has also been developed

for producing shrunken grain leather from buffalo hides.

The know-how for the production of chrome retan crust, blue chrome, picked pelts, suede clothing, grain clothing, morocco, aniline leathers, improved sausage casings and surgical sutures have been demonstrated to private firms for manufacture and export.

A wide range of machines and mechanical structures from water coolers and flaked ice machines to industrial steel structures have been designed and fabricated by the Central Mechanical Engineering Research Institute, Durgapur.

### Economic Steel Structures

The industrial steel structures are lighter than the conventional steel structures by over 40 per cent, thereby effecting a major saving in overall costs. The design is being exploited by commercial engineering firms.

### Jawan Scooter

In collaboration with a private firm, the Institute has developed a scooter with more horse power. Known as 'Jawan' the scooter will go into mass production by the end of the year. With the help of motor cycle and scooter manufacturers, the Institute is rationalising components used by them so that the ancillary industry can adopt modern mass production methods and turn out products of quality in quantity. The Institute is also working on the development of 10 H.P. tractors and agricultural implements to be used with them.

### ELECTRONICS

In the field of electronics, the achievements of our scientists have been outstanding. Electronics plays a vital role in automation and instrumentation industry. Television, radio, radar, tape recorders and computers are all based on it. Research at the National Physical Laboratory (NPL), New Delhi, has resulted in the development of processes for the manufacture of mica and ceramic capacitors, ferrites and ceramic rods.

Silver mica capacitors, based on the NPL process, are being manufactured by the Indian Telephone Industry, Bangalore, for its own needs. Ceramic capacitors have

been licensed to Bharat Electronics Ltd., Bangalore.

The pilot plant at NPL has been producing soft ferrites, required by the radio receiver manufacturers, and ceramic rods, used for carbon resistor production. They are being supplied both to industry and to a research group in the Atomic Energy Commission, manufacturing precision resistance for nuclear instruments. Two firms will be shortly producing soft ferrites and ceramic rods according to the NPL know-how.

### TV Receivers

Recognising the growing importance of television as an important medium for audio-visual education and entertainment, the Central Electronics Engineering Research Institute, (CEERI), Pilani, has designed and developed television receivers conforming to international standards. The know-how has been made available to commercial firms for the production of 30,000 TV receiver sets.

The development of a high-speed aircraft is a strategic and economic necessity for India. The National Aeronautical Laboratory (NAL), Bangalore, which was established to adequately back the aircraft industry has installed a 4-feet trisonic wind tunnel, costing more than Rs 2 crore, for testing aircraft models of about 3 ft length and 2½ ft span in all the three speed ranges—subsonic, transonic and supersonic, up to four times the speed of sound (about 2,500 m.p.h.). The tunnel will be ready for operation shortly. Model testing in wind tunnel saves hours of costly and risky test flying of prototype aircraft.

The Central Scientific Instruments Organisation (CSIO), Chandigarh, has developed a number of electronic, electrical, optical and mechanical instruments required by industry and research and educational institutions.

These achievements of CSIR laboratories are only examples indicative of their significant contribution to national economy. With the growing recognition of the importance of science and technology for national reconstruction, scientific research programmes are becoming more and more closely geared to the economic development plans of the country.

Men of Science from Twenty-six Asian Countries Meet in New Delhi to Discuss

# SCIENCE AND TECHNOLOGY In Asia's Development

CASTASIA, organised by UNESCO, will consider action to further the application of science to Asia's development.

New Delhi is now playing host to the third big international conference organised in India by the United Nations in the last two years. The Conference on the Application of Science and Technology to the Development of Asia (CASTASIA), opened by Mrs. Indira Gandhi, the Prime Minister, at Vigyan Bhavan on August 9 has met to consider, as the name of the conference itself makes explicit, a very vital problem concerning this continent. In fact this is the third of its kind organised by UNESCO, for studying and furthering the application of science and technology to development. The first, held in Lagos in 1964, discussed Africa's problems in this field and the second at Santiago in Chile in 1965 was concerned with Latin America. The New Delhi conference will discuss Asia's science and technology and action to promote their application.

Representatives of 26 Asian countries and of the U.K. and the U.S.A. and of various U.N. organisations, inter-governmental organisations and several international non-governmental organisations are participating in the New Delhi Conference. The subjects being discussed include (1) the present status of science and technology in Asia, (2) pre-requisites for the application of science and

technology to development, (3) the improvement of science education in the countries of Asia, (4) science policy and its relation to national development planning, and (5) a 15-year (1965-80) draft Asian plan for scientific and technical manpower and cost of research and development. The subjects will not only be considered by a number of plenary sessions which the public will be allowed to participate by three commissions in greater detail. The Conference will also examine broad problems of policy, pattern and priorities for development-oriented research.

### COUNTRIES TAKING PART

|               |                 |
|---------------|-----------------|
| Afghanistan   | Malaysia        |
| Australia     | Mongolia        |
| Burma         | Nepal           |
| Cambodia      | Netherlands     |
| Ceylon        | New Zealand     |
| China         | Pakistan        |
| France        | Philippines     |
| India         | Singapore       |
| Indonesia     | Thailand        |
| Iran          | USSR            |
| Japan         | UK              |
| Rep. of Korea | USA             |
| Laos          | Rep. of Vietnam |

The situation of science and technology in Asia that confronts the Conference presents none-too-

bright a picture. In 1965, the latest year for which statistics are available, there were only 867,000 scientists and engineers in the 18 countries which had a total population of about 1,000 million, whereas in the United States there were over 1,200,000. There is a large gap between Asia and the developed world. For instance, Belgium which has a tenth of the overall population of Pakistan has three times as many scientists and engineers. Even within Asia, some countries are comparatively better placed. Japan has more qualified research workers than the rest of Asia put together. India is among the more advanced countries of the region.

### ASIAN PLAN

The draft Asian plan to be examined by the Conference calls for a six-fold increase in the number of Asia's scientists and engineers by 1980. Even then the region would only attain the level reached by the USSR and the O.E.C.D. countries in 1950. The draft plan is based on the projections of educational output for a 15-year period ending 1950. In this regard it is worth waiting to find how the Conference will deal with the problem faced by India about unemployed engineers and the reduction in the number of admissions to engineering colleges and technical institutes.

The problem of dearth of qualified scientists and engineers in developing countries is made acute by the migration to developed countries of large numbers of them trained at great cost. It is international

migration of scholars and scientists otherwise known as "Brain Drain" will be thoroughly examined by the New Delhi in the context of Asia. UNESCO says that although it is not desirable to stop international movements of scientists, it has to be examined how the depletion of scientific and technological manpower will cause serious damage to the national economy of those countries which lose them. The loss would be felt more acutely by developing countries whose stock of trained scientists, technologists and technicians, as a proportion of the total population is low. The problem also needs study in the context of the prevailing level of economic development which can only absorb a relatively small number of trained personnel.

### WOMEN SCIENTISTS

The Conference is also expected to take up the question of attracting larger proportions of Asian women into the fields of science and technology.

Studies on the opportunities and role of women in different scientific and technical levels have already

been concluded in a number of countries.

The UNESCO is also setting up a pilot project on the education, training and utilisation of women as technicians.

As regards the access of women to careers in science and technology at higher levels, a number of case studies are being conducted in various parts of the world—one of them in south India. These studies will take account of both social and economic factors and are expected to provide a useful basis for planning a fuller utilisation of women in science and technology in Asia.

UNESCO's studies reveal that the proportion of women employed in Thailand is a little over 0.1, in Cambodia and India a little under 0.1, in Ceylon and Pakistan around 0.01 and in Laos negligible. It has also been found that not only is the overall proportion of women employed in these fields very small, but the nature of the work they do is usually at lower technical levels.

The Conference will discuss these problems in detail and would suggest measures to attract more women to these careers.

### FARM PRODUCTION

The Conference has also before it the problem of increasing agricultural production in Asian countries by the application of science and technology. Here perhaps India will be able to speak with authority on the basis of her recent experience with the new farm strategy.

The Conference will review the existing conditions of agricultural sciences in Asia with special reference to improving the standard of farm technology.

The Conference is likely to formulate general principles regarding training of agricultural technicians and basic research.

As a result of technical progress in rural areas in Asian countries and the better employment openings it creates, there is an increasing demand for middle-ranking specialised personnel to serve the rural population. It is of fundamental importance to provide technical agricultural training for such personnel, particularly as this enables a proper balance to be established between technological development in rural areas and that in urban areas.

## ATMA RAM INTERVIEW

from Page 3

of the scientific approach as also its benefits. Awareness was already there among the people. Dr Atma Ram pointed out how our farmers, as soon as they come to know by observation and experience that a certain seed or fertiliser was good, adopted them. They were no longer tradition-bound. This was a success of science, he claimed.

Science teaching in the country was another topic on which Dr Atma Ram had some off-the-beaten track ideas. He said science teaching in the schools should be production-oriented. When a child attained a certain age, say the secondary school level, he should acquire more and more machine sense. "We are using all kinds of machines but we have not developed any machine sense," Dr Atma Ram pointed out. He adduced the reason for this to the low esteem in which a technician or a machine-man is held by our society.

### LANGUAGE FOR SCIENCE TEACHING

From the question of teaching to the question of language was a natural jump. As one who had been engaged in the pursuit of science for more than two decades, Dr Atma Ram's views on the medium of science teaching were worth finding out. He said "My straight answer is that we should use that language

which can make us understand science." In any language he was for retaining the scientific terminology that has been in use for years, like thermal expansion, alpha and gamma. He pointed out how some years ago students learning higher science also used to learn German and French. The language for science teaching, he added, should be one which would bring about the development of our country.

We drew his attention to a recent article in 'New Scientist', a popular science weekly of London, on the progress made by China in science. The article said that apart from synthetic insulin and the formidable technology of separating U-235 from U-238 for a hydrogen bomb and the successful launching of a guided missile, Chinese scientists and engineers have built the world's first synthetic benzene plant, an automated top-blown steel converter using pure oxygen, a new double light-beam infrared spectro photometer and so on. We asked him why we had not such achievements to our credit. Dr. Atma Ram said he was not bothered or overawed by the achievements of other countries. Our scientists were not doing as bad as people think, he added, "They have also wonderful achievements to their credit". The Director General thought there was no need to be parochial in science. Some countries achieved something a little earlier, and some later. And he said that after all the Chinese were not so backward; only the world had not known much about their work earlier. And we did not suffer in comparison, he asserted.

### Side Track

## INDIA FROM U.N.

THE UNCTAD II meet, held in New Delhi, last February, brought to this country many people from many lands. Hard-boiled economists, seasoned experts on trade and development, journalists and a host of international civil servants. For more than three months, men and women of different nationalities worked and lived together; many of them were too engrossed in the serious business of UNCTAD to be able to see much of the country; some saw a bit; for quite a few it was a mere assignment which left no impression of the backdrop.

Among those who carried back sweet memories of the country was Miss Janette Lewis McNeill, Chief, Economic and Social Information Unit, at the United Nations Headquarters in New York. She has even composed a poem:

We are leaving it behind now. This is the last goodbye  
To the flat brown plain of the Jamuna and the Ganga  
Spread out a thousand feet below.  
"Did you like India?" a passenger asks politely,  
And I nod, not trusting my voice to speak,  
Seeing not the whole brown, arid plain  
But a small green marshland alive with waterbirds  
East of Wazirabad, and children bringing fresh green peas  
To a thirsty traveller from a field across the road;  
Seeing not the whole, vast brown expanse below  
But a green banana clump near Hardinge Bridge  
And Dasharath, 12, bringing a rambler rose,  
And the Ridge, bright with peacock plumes.  
And new-green babul trees on a Sunday morning.  
Then, seeing a sudden rise and fall of land below the plane,  
Remembering the hilly road to Dehra Dun and a small white temple

Cool beneath a giant tree.

And now, seeing a flash of white across the northern sky—

The massive barrier of the Himalayas—remembering a closer view

From a rhododendron-shaded trail above Mussoorie...

Three hundred miles have passed since Delhi:

Now I can trust my voice again.

"Yes," I reply. "I liked it very much."

## A FULL LIFE

A secular society may not need a religion; but no society can live without a culture. Especially for the Indian society which has its roots deep in an ancient civilisation and which still takes pride in its past glory the recovery and preservation of its cultural heritage has a great significance. In its pursuit of modern science and technology in the midst of a world which is fast losing its faith and becoming cynical, the Indian society can find an inspiration and a sense of values in its ancient culture. In the death of Shripad Damodar Satavalekar, India has lost a great scholar and an ascetic missionary who recovered and reinterpreted the Vedic culture for modern India.

Pandit Satavalekar began his career at the age when generally people come to the end of their career. He retired from service at the age of fifty and took to the study of the Vedas. He established an Ashram in the former princely state of Audh, which was destroyed during the violent agitation which followed the assassination of Mahatma Gandhi. Undeterred, he shifted to Pardi, a small village near Surat in Gujarat. He did all the manual labour to reclaim the woodland for his new Ashram where he lived till his death. His Ashram has provided a learning centre for Sanskrit students and a treasure-house of Vedic works.

He worked in seclusion for the past fifty years to spread the message of the Vedas. He brought



IGNORAMAN  
Wants to Know  
what  
will now be  
cast on Asia  
through CASTASIA

out several volumes of Vedic texts and commentaries, apart from the publication of a monthly magazine, 'Purushartha' (Duties of Man). He tried to mould the individual and the society in the ways of the Vedas, which, he believed, built a vigorous mind in a sturdy body. For him, physical culture was as important as spiritual discipline. The political and social thinking of the Vedas, he said, aimed at a resurgent and optimistic society and such a society made the nation prosperous.

Pandit Satavalekar not only preached what he believed; he also practised it. He was called Vedamurti (embodiment of the Vedas) for he led a life strictly according to the tenets of the Vedas and imbibed in himself all the scholarship of the scriptures. No wonder his personality glowed with a brightness, with his head held upright and all the senses intact, even at the age of 102 years. He aspired to live for 120 years, a full term of life according to the Vedas.

With Pandit Satavalekar comes to an end the era of the stalwarts who, with their lifelong devotion and work, blazed bright trails in the different walks of Indian life during the past hundred years.

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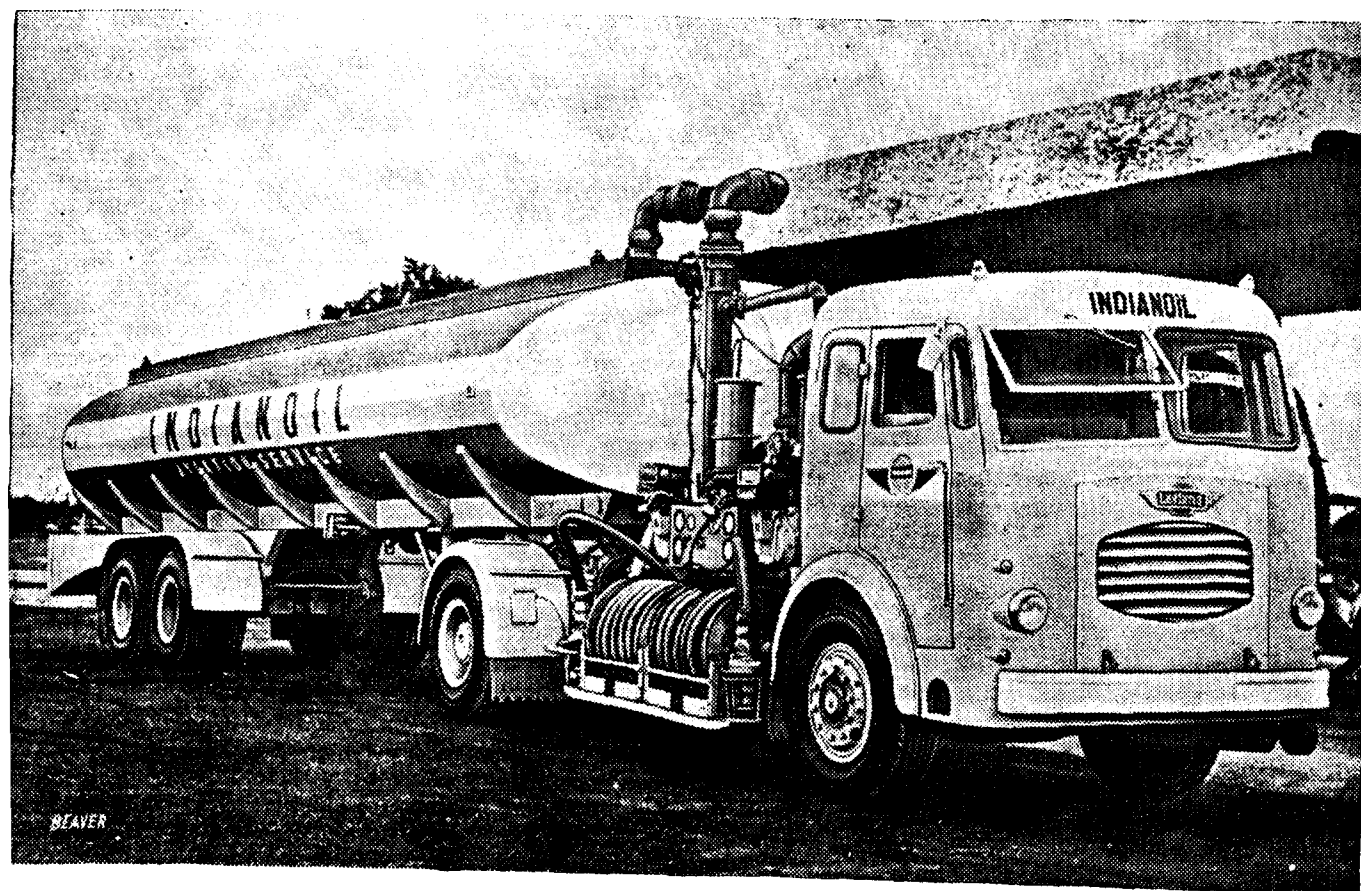
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## PLAN FOR THE YEAR

The good harvest of 1967-68 has brought a measure of relief to the economy from the strains under which it has been operating during the past two and a half years. It has also initiated the process of recovery to normalcy in economic

affairs. How fast and enduring this recovery will be depends upon the success of economic management during the lean months of 1968 and even thereafter, if the next agricultural season turns out to be indifferent.

The prospect of putting the economy on the path of rapid growth also hinges on the success of the preparatory effort during 1968-69.

The Annual Plan for the year has been formulated against this background.

THE Annual Plan for 1968-69, prepared by the Planning Commission, was presented to Parliament at the end of last month.

The total outlay for the Annual Plan will be Rs. 2,337.43 crore, as against Rs. 2,246 crore in 1967-68 and Rs. 2,082 crore in 1966-67. The outlay includes Rs. 140 crore for building up buffer stock of food-grains.

Of the total outlay, the States will get Rs. 952.33 crore, and the Union Territories Rs. 65.37 crore; the remaining Rs. 1,319.73 crore will be spent in the Central sector.

In addition, institutional credit of Rs. 120 crore will be available from land development banks and other agencies for minor irrigation. Similarly, the Life Insurance Corporation is expected to provide Rs. 12 crore for housing programmes.

The Plan outlay is distributed under the following main heads :

|                                                     | (Rs. crore) |
|-----------------------------------------------------|-------------|
| Agriculture, co-operation and community development | 327.78      |
| Irrigation and power                                | 493.49      |
| Organised industry and minerals                     | 539.33      |
| Village and small industries                        | 41.41       |
| Transport and communications                        | 426.16      |
| Social services                                     | 347.39      |
| Others                                              | 21.85       |
| Buffer stock                                        | 140.00      |

These investments, if accompanied by favourable weather conditions and revival of industrial production, are expected to yield 5 per cent growth rate in national income this year. The anticipated growth rate in foodgrain production will

be around 7.4 per cent, and in industry 5 to 6 per cent.

With the recovery in the economy, current revenues of the Central and State Governments are likely to improve. Earnings of departmental undertakings may also show a moderate rise, as also public savings, particularly because of the abolition of food subsidy. On the basis of the budget estimate for 1968-69, net savings of the Central Government work out at Rs. 241 crore. Some

improvement may also be expected in private savings with further growth in national income. Even the rate of domestic savings may turn out to be about 8.5 per cent of the national income. As against this, external assistance is likely to be smaller at 3 per cent of the national income.

### OVERALL APPROACH

The Annual Plan document says that the overall approach for the current year, in the context of the present economic situation, is to secure a feasible rate of growth generating inflationary pressures. As the resources position continues to be difficult, effort is to be directed towards a fuller utilisation of the infrastructure already created, and the filling up of essential gaps in the economy to pave the way for unhindered future development.

The accent in the Annual Plan is on revitalising the economy by providing for the immediate and short-term needs of the economy. At the same time, the long-term perspective is not lost sight of; the need to fill up vital gaps to ensure future development has been a guiding consideration in the selection of projects for inclusion in the Annual Plan.

Agriculture and those developmental activities which directly cater for the growing needs of agriculture have been given the highest priority. The new agricultural strategy introduced in 1966-67, which aims at raising agri-

The outlays on the State Plans are as follows :—

|                                       | (Rs. crore) |
|---------------------------------------|-------------|
| Andhra Pradesh                        | 61.55       |
| Assam                                 | 29.40       |
| Bihar                                 | 71.70       |
| Gujarat                               | 79.70       |
| Haryana                               | 22.04       |
| Jammu & Kashmir                       | 21.70       |
| Kerala                                | 44.27       |
| Madhya Pradesh                        | 57.00       |
| Madras                                | 66.35       |
| Maharashtra                           | 139.00      |
| Mysore                                | 51.32       |
| Nagaland                              | 6.00        |
| Orissa                                | 31.60       |
| Punjab                                | 30.30       |
| Rajasthan                             | 43.55       |
| Uttar Pradesh                         | 142.18      |
| West Bengal                           | 54.67       |
| Andaman & Nicobar Islands             | 2.51        |
| Chandigarh                            | 1.59        |
| Dadra & Nagar Haveli                  | 0.40        |
| Delhi                                 | 24.40       |
| Goa, Daman & Diu                      | 7.74        |
| Himachal Pradesh                      | 15.50       |
| Laccadive, Amindivi & Minicoy Islands | 0.45        |
| Manipur                               | 3.72        |
| NEFA                                  | 3.40        |
| Pondicherry                           | 2.18        |
| Tripura                               | 4.50        |

cultural productivity through intensive measures embodying the package approach, introduction of high yielding varieties and multiple cropping programmes, will continue to guide development of agriculture.

In respect of major irrigation, due care has been taken to provide adequate outlay for such of the continuing schemes which are capable of yielding quick results. Minor irrigation programmes linked with rural electrification will receive greater attention. These steps *inter alia* are considered necessary to avoid any major set-back in agricultural production due to possible failure of rains.

As for industries, there is immediate need for stepping up industrial growth which had tended to slow down in the past two years. Concerted efforts will be made during the year to ensure a fuller utilisation of the existing capacity, to improve the efficiency and performance of the public sector projects, and to encourage larger investments in those industries which would provide essential agricultural inputs, such as fertilisers, pesticides, tractors, diesel engines and pumps.

In respect of essential overheads like power and transport and communications, the emphasis is on early completion of projects already under way.

Amongst social services, a sizeable increase has been proposed in the outlay under family planning.

## RESOURCES

The Annual Plan envisages that the Central and State Governments will provide about Rs. 1154 crore from their domestic budgetary resources. Budgetary receipts corresponding to external assistance are estimated at another Rs. 876 crore. The balance of the outlay, amounting to about Rs. 307 crore, is expected to be met by deficit financing.

For financing their Plans, the States will be given Rs. 615 crore as assistance from the Centre. There is also a provision of Rs. 835 crore for additional resources at the Centre and Rs. 319 crore in the States' sector, which includes measures to increase the surplus of public enterprises.

## TARGETS

Targets of production for the current year as against the achievements in 1967-68 are as follows:

| Item                                                     | 1967-68<br>(Achievement) | 1968-69<br>(Target) |
|----------------------------------------------------------|--------------------------|---------------------|
| <b>Agriculture</b>                                       |                          |                     |
| Foodgrains (million tonnes)                              | 95.00                    | 102.00              |
| Sugarcane (million tonnes)                               | 9.90                     | 12.50               |
| Oil seeds ( " )                                          | 9.00                     | 10.00               |
| Cotton (million bales of 180 kg. each)                   | 6.00                     | 6.70                |
| High yielding varieties programmes (million acres)       | 15.00                    | 21.00               |
| Fertiliser consumption (thousand tonnes)                 | 17.50                    | 28.00               |
| <b>Irrigation</b>                                        |                          |                     |
| Potential (million acres)                                | 20.90                    | 23.10               |
| Utilisation ( " )                                        | 17.50                    | 19.30               |
| <b>Power</b>                                             |                          |                     |
| Installed capacity (million kW)                          | 13.09                    | 15.22               |
| Villages electrified                                     | 61,200                   | 65,700              |
| Pump sets energised                                      | 80,100                   | 95,400              |
| <b>Village &amp; Small Industries</b>                    |                          |                     |
| Handloom, powerloom and khadi cloth (million metres)     | 3,185                    | 3,300               |
| Raw silk (lakh kg.)                                      | 22.0                     | 24.0                |
| Industrial estates                                       | 360                      | 400                 |
| <b>Industrial &amp; Mineral Production</b>               |                          |                     |
| Steel ingots (million tonnes)                            | 6.35                     | 7.5                 |
| Machine tools (organised sector) (Rs. crore)             | 24.00                    | 25.00               |
| Railway wagons                                           | 19,321                   | 22,000              |
| Cement (million tonnes)                                  | 11.46                    | 12.5                |
| Drugs & pharmaceuticals (Rs. crore)                      | 210                      | 235                 |
| Mill cloth (million metres)                              | 4200                     | 4300                |
| Sugar (lakh tonnes)                                      | 22.2                     | 29.0                |
| Coal (million tonnes)                                    | 71.00                    | 75.00               |
| Iron ore (million tonnes)                                | 27.0                     | 29.0                |
| Petroleum products (tonnes)                              | 13.6                     | 15.2                |
| <b>Agricultural Machinery</b>                            |                          |                     |
| Power-driven pumps (lakh)                                | 3.50                     | 4.00                |
| Diesel engines (lakh)                                    | 1.25                     | 1.40                |
| Tractors                                                 | 13,000                   | 16,000              |
| <b>Transport &amp; Communications</b>                    |                          |                     |
| Traffic originating freight (million tonnes)             | 199.6                    | 204.0               |
| Shipping (lakh G.R.T.)                                   | 18.9                     | 20.1                |
| <b>Social Services</b>                                   |                          |                     |
| Education—Additional enrolment in Classes I to XI (lakh) | 34.84                    | 38.02               |
| University enrolment (lakh)                              | 1.40                     | 1.50                |
| Hospital beds (in thousand)                              | 250.2                    | 255.7               |
| Doctors practising (thousand)                            | 96                       | 103                 |
| Additional houses (in thousand)                          | 23.6                     | 26.5                |

Adequate procurement of foodgrains and their planned release through public distribution system is necessary for keeping the seasonal rise in food prices during the lean months under restraint and for stabilising the average wholesale price index during 1968-69 around the average index for 1967-68.

With the recovery in industrial production, some improvement in the current revenues of the Central and State Governments is expected. Earnings of departmental undertakings may also show a moderate rise. If prices remain stable and weather conditions normal, public savings may show some increase particularly because of the abolition of food subsidy. On the basis of

the budget estimates for 1968-69 net savings of the Central Government work out at Rs. 241 crore. Some improvement may also be expected in private savings with further growth in real income.

## REVIEW FOR 1967-68

The Annual Plan for 1968-69 also gives a review of the economic situation in 1967-68. In real terms, national income in 1967-68 was expected to be 9 per cent higher than in the preceding year. The rise appears so high because the level of real income was unduly depressed in 1966-67.

A basic change was brought about in the economic situation

An abstract of the distribution of outlay among the various heads of development for 1968-69 and the corresponding expenditure for 1967-68 are given below :

| Heads of Development                       | (Rs. crore)            |                   |
|--------------------------------------------|------------------------|-------------------|
|                                            | 1967-68<br>Expenditure | 1968-69<br>Outlay |
| Agricultural Programmes                    | 284.87                 | 270.24            |
| Community Development and Co-operation     | 70.02                  | 57.54             |
| Irrigation (including Flood Control)       | 147.16                 | 154.69            |
| Power                                      | 400.56                 | 338.80            |
| Organised Industry                         | 520.85                 | 539.33            |
| Village and Small Industries               | 44.94                  | 41.41             |
| Transport and Communications               | 424.09                 | 426.16            |
| Education                                  | 113.82                 | 121.46            |
| Scientific Research                        | 18.20                  | 22.03             |
| Health and Family Planning                 | 73.94                  | 88.80             |
| Water Supply                               | 36.86                  | 33.81             |
| Housing and Urban and Regional Development | 27.00                  | 23.20             |
| Welfare of Backward Classes                | 20.06                  | 20.02             |
| Social Welfare                             | 4.39                   | 4.71              |
| Craftsmen Training and Labour Welfare      | 13.64                  | 13.73             |
| Public Co-operation                        | 0.38                   | 0.48              |
| Rehabilitation                             | 13.46                  | 14.65             |
| Rural Works                                | 6.50                   | 4.50              |
| Other Programmes                           | 21.25                  | 21.85             |
| Buffer Stock                               | —                      | 140.00            |
| <b>Total :</b>                             | <b>2,241.99</b>        | <b>2,337.41</b>   |

during the latter half of 1967-68 by the bumper crop. The production of foodgrains was estimated at 95 million tonnes as against the previous record of 89 million tonnes in 1964-65. The increase works out to 26.7 per cent over the preceding year and 6.7 per cent over the level reached in 1964-65.

The increase in agricultural production last year, though influenced by well-spread and timely rainfall throughout the country, also effects the reponse of agricultural production to the new strategy. There has been a remarkable improvement in the response of farmers to improved methods of farming and a marked change in the attitude towards adoption of the new strategy.

About 6 million acres were brought under high yielding varieties of seeds during the Kharif season as against 4.7 million acres during the preceding agricultural year. Another 9 million acres were expected to have been covered during the Rabi season. Simultaneously, about 5 million acres had been added during the year to the area under irrigation. The use of nitrogenous fertilisers went up by

45 per cent and phosphatic fertilisers by 60 per cent over the levels reached in the preceding year.

The large increase in food production had also been accompanied by substantial improvement in the output of other crops as well. The total production of jute and mesta was estimated to have gone up from last year's level of 66 lakh bales to 78 lakh bales, sugarcane from 95 lakh tonnes to 99 lakh tonnes, cotton from 49 lakh bales to 60 lakh bales, and oil seeds from 65 lakh tonnes to 90 lakh tonnes. The stagnation in agricultural production during the preceding years has been broken and the aggregate output from agriculture is estimated to be 20 per cent more than in 1966-67.

Industrial production also showed signs of picking up from the second quarter of the year. As against an increase of 0.3 per cent in the first quarter, the increase in the general index of industrial production worked out to 1.5 per cent in the third quarter. However, the overall rate of growth of industrial production, which declined from 4 per cent in 1965-66 to

2.8 per cent in 1966-67, may turn out to be around 2 per cent for 1967-68.

More recently the bank rate has been reduced from 6 per cent to 5 per cent to accelerate industrial recovery. Further tax incentives have been provided in the Central Budget for 1968-69 to promote private investment and exports. Besides, the provision of the Industries (Development & Regulation) Act was relaxed in order to provide greater flexibility in the operation of existing facilities. Industries were allowed to diversify their output up to 25 per cent of their licensed capacity without securing a licence even if it involved import of capital equipment or raw material, and production in excess of the licensed capacity up to 25 per cent was permitted without seeking a fresh licence.

As for creating essential overheads, the year witnessed the commissioning of 1.85 million kW of additional generating capacity, taking the total to 13.1 million kW. In the development of transport and communication facilities, except in railways where the programme had to be rephased on account of the general industrial stagnation, all other programmes, continued to progress as scheduled.

With regard to exports and imports, export earnings amounted to Rs. 1199 crore, as against Rs. 1157 crore in 1966-67, while imports came down to Rs. 1950 crore from Rs. 2087 crore. To promote further increases in exports and substitution of imports, some additional measures were announced. Export duties were revised downwards and cash assistance made available to larger number of export items at higher rates. To speed up import substitution, 260 items, whose domestic production has increased substantially, were placed in the banned list and import of another 119 items restricted.

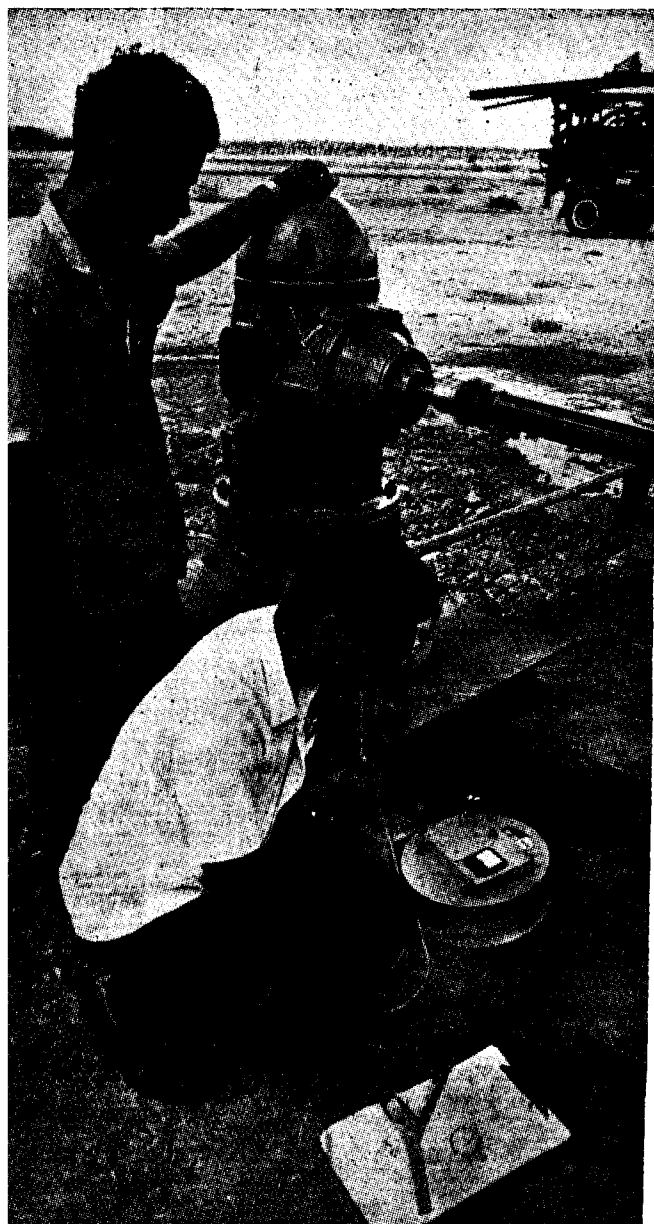
Though firm estimates of year-wise break up of domestic savings are not available for all sectors of the economy, the rate of domestic savings may turn out to be around 8 per cent in 1967-68. The rate of investment in the economy would be about 11.5 per cent during the year.



Technicians (left) of the U.N. Groundwater Investigation Project carry out a probe of the earth to determine water saturation.

To raise a  
Second  
Paddy Crop

J. I. Peters, a Madras State geologist, conducts a test in a bore hole.



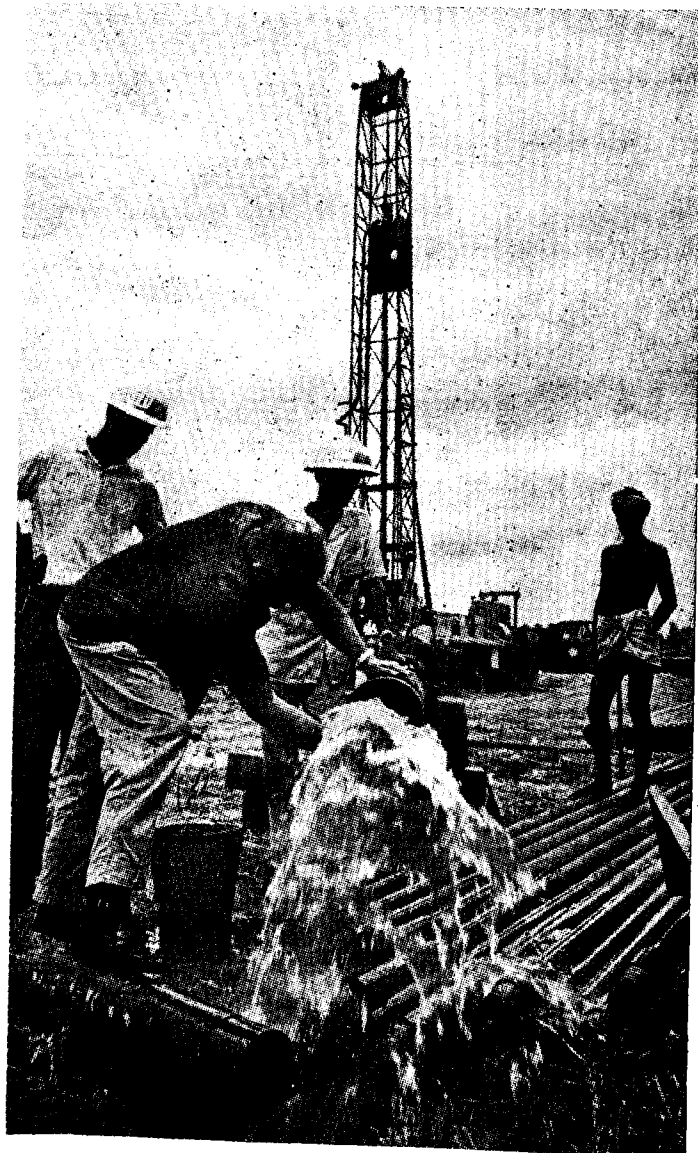
## U.N. Taps Cauvery Water Under Delta

**N**EW sources of water to help farmers raise two crops of rice a year in the Cauvery Delta, south of Madras, needed to keep pace with rising food demands, are being sought under an expanding effort of India and the United Nations Development Programme (UNDP).

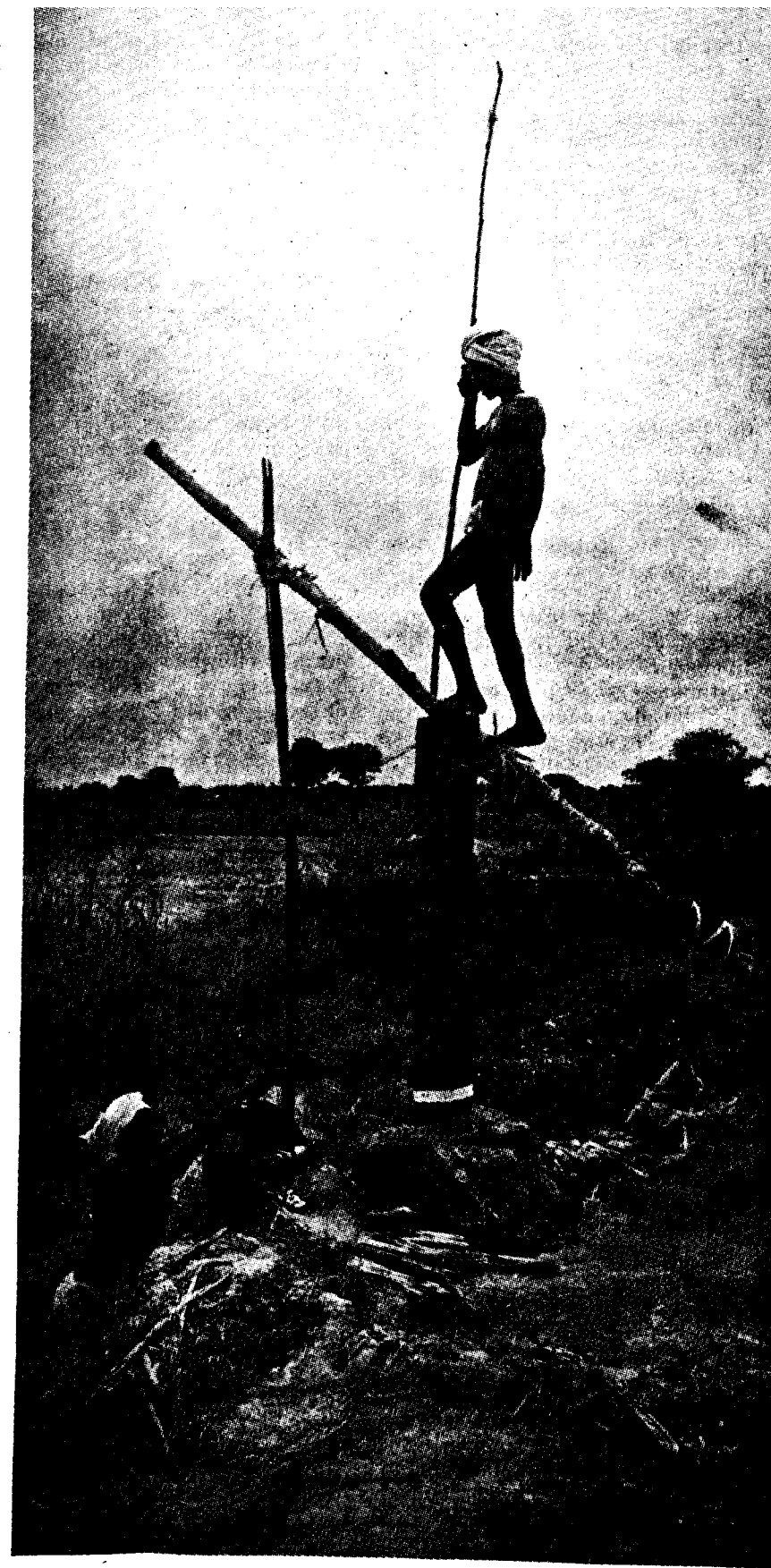
At present the delta—sometimes called “the rice-bowl of South India”—is watered by monsoons and an irrigation system that has been developed over the past 1,800 years. But monsoons are erratic, and irrigation channels shrink to muddy trickles much of the time between January and June.

To fill the gap left by seasonal fluctuations, a team of international experts and local specialists is introducing modern equipment and new technology for water exploration and drilling of wells. The work started as a part of a project launched in 1966 in four areas of Madras State and will be intensified under a Phase II project for the Cauvery Delta alone.

When the plane from Madras noses down for a landing at Tiruchirapalli, 200 miles south, one sees



Cloyd D. Daugherty, UN Drilling Superintendent, checks the water flow from a newly drilled well for sand content and salinity.



Tanjore villagers raise water from a stream using the traditional system of lever and counterbalance. —Photographs: UNITED NATIONS

a tropical landscape in jewel tones of green and blue—coconut palms, plantain groves, sugarcane, wet rice fields reflecting the sky. Then, a short distance from the airport, the scene changes. On many stretches of a drive from “Trichy” east to Tanjore and beyond, the road passes parched fields, scrubby growth, goats nibbling on dry stubble. “What makes the difference?” The answer is: “Water”.

The explanation for this unusual phenomenon is quite simple. In the delta of the Cauvery River, there are two monsoons a year—the southwest monsoon in mid-June or later, and the northeast monsoon which brings a heavier water supply in November. When the rains are timed just right, the farmers can grow two rice crops a year. But ideal conditions seldom occur. In many years, by early spring the rivers are dry and the canal system in much of the delta is dry. If the first monsoon is behind schedule, the rice must be planted late—and then the first harvest will be too late to permit a second crop. The crux of the problem in growing two rice crops a year is to have water by early June for the nursery beds from which seedlings will be transplanted. But last year, for example, water was not available until several weeks later from irrigation sources or the monsoon rains. When the time nears for harvesting the crops, water is needed to mature the grain—but, just at this period, too, water is often short, and the yield may suffer. In fact, it is agreed that the perfect pattern for two-crop farming occurs only once in ten years.

The primary purpose of the Cauvery Delta Project, therefore, is “to try to overcome the vagaries of the monsoon” by tapping underground water, which is drawn up through wells to fill the dry-season gaps and provide moisture exactly on schedule at the most critical times.

The most desirable object would be an integrated system in which groundwater (from wells) would be tied in with natural rains and the existing irrigation system. Eventually, it is hoped, a controlled water supply could be extended to areas not fully covered by the present network of canals.

With this goal in mind, a team of United Nations and Madras State personnel has pushed the drilling of test wells at selected sites in the Cauvery Delta. Boreholes are put down with modern rotary rigs to investigate water supplies at different levels, and the flow is tested for both quantity and quality.

So far, six test holes have been completed, including one drilled to 1,200 feet, described as unusually deep for this area. Others will range from 500 to 1,200 feet. When drilling is under way, crews work 24 hours a day, in three shifts, living in tent camps remote from established communities.

## DRILLING WELLS

Drilling is, however, only one problem. In addition, careful calculations must be made to show how much water could be taken out of the ground in different parts of the delta without exceeding the amount put in through rains. Otherwise, if there is an “overdraft” in areas close to the sea, salt water may intrude into the land from which fresh water is removed.

To aid in selection of drilling sites, with an eye on possible salt-water intrusion as well as actual sources of water, project personnel have collected basic geologic information and samples from which a picture of underground structures and seasonal fluctuations can be pieced together. For this purpose, hydrogeologists have tramped over the delta from the Cauvery River's source in the West to the Bay of Bengal roughly 100 miles eastward.

As part of the UNDP-aided project, permanent automatic recording devices will be installed in boreholes to provide further and more detailed information.

The potential of the delta, according to a recent report by the Administrator of the United Nations Development Programme (UNDP), is immense. The report points out:—

“The State of Madras is the largest rice-producing region of India. Of its 6 million acres of land under rice cultivation

over 1.4 million are in the delta of the Cauvery River... In a nationwide effort to increase the production of food, the Government of India attaches high priority to intensification of agriculture in the Cauvery Delta, whose potential is not fully utilised... National development of groundwater would reduce the influence of yearly fluctuations of rainfall on agricultural yields...”

The United Nations-aided project fits into intensive local efforts to boost harvests. For example, the State of Madras has encouraged widespread planting of a high-yielding rice strain suited to conditions in the area—known as ADT-27—and experimentation with farm practices.

A hydrogeologist provided by Madras State estimates that plantings of ADT-27, which can yield 50 per cent more than traditional strains, covered some 400,000 acres last year and would be extended to 700,000 acres this summer. The nursery beds, for which water is needed on a precise schedule to ensure maximum yield, cover about one-tenth of the final acreage from which rice is harvested.

The present and possible water sources in the delta include the network of canals in the Grand Anicut irrigation system, parts of which date back to 200 A.D. Within the delta, the project area covers about 4,500 square miles. At selected points, to permit investigation of various types of water-bearing strata, boreholes are being drilled in a pattern extending from about the middle of the delta to Tranquebar near the Bay of Bengal.

A typical drilling site, for example, is the 1,200-foot borehole near the village of Mungilkkudi, some 30 miles east of the ancient temple city of Tanjore (Thanjavur) and about 15 miles inland from the sea. The road to Mungilkkudi runs, part of the time, along streams still high enough to permit families to net fish, and passes irrigation ponds (known here as tanks) with sufficient water for children's swimming. But in other areas the water has dwindled to only a

slim crescent around the rim of a pond or a narrow rivulet in the centre of a stream. Some areas are green with coconut palms and bamboo thickets shading thatched-roof cottages where red peppers lie drying in the sun. In other districts brick-coloured laterite soil is rough, eroded and nearly barren.

## SEARCH FOR WATER

Here the search for water takes many forms. At the edge of a patch of sugarcane, for example, a device operated by two men lifts, water from a ditch, five feet below the level of their field, into their irrigation furrows. One of the men balances himself on a log, set above the higher ground on a fulcrum, like a see-saw board; as he shifts his weight backward, the board tips up and brings with it a rope holding a bucket of water; the second man, standing on the lower level, guides the bucket and empties it into the furrow. Hour after hour, the lifting goes on, two cubic feet of water at a time. In another field, farmers are putting down a small well by means of a hand-drilling rig.

At the Madras State seed farm at Mungilkkudi, the 41-foot mast of a rotary rig looms above a crew running tests on a stream of water being pumped up from 220 feet. This borehole has been drilled to a depth of 1,200 feet, and specific tests are being carried out in turn at different levels—220, 560 and 720 feet. At present, only about 150 gallons of water per minute is being drawn out, but it is necessary to know more about the quantity and quality at each depth. Test of some characteristics can be carried out at the area office in Tanjore; others are performed at project headquarters in Madras City. However, there is evidence of promising water-bearing strata. As work progresses, it is expected that a total of six drilling rigs will be available under the UNDP contribution and two from the Government of India.

## DAY-LONG TESTS

At Mungilkkudi, the borehole, with a top diameter of 14 inches, has been lined, so far, down to 220 feet with casing, coarse gravel and slotted pipe, and water is being pulled up with a diesel-driven tur-

bine pump. Tests such as the one under way usually go on for 24 hours without a break. Drilling in the UNDP-aided project is co-ordinated with other water investigations being carried out in the area by the Madras State Government.

The Cauvery Delta is one of four areas included in a current UNDP project calling for groundwater investigations in Madras State. The other three areas are Madras City and its environs; the Palar River basin, 30 miles south; and the Neyveli region, 80 to 120 miles south of Madras City.

In June this year the UNDP's Governing Council approved plans for carrying forward and intensifying work in the Cauvery Delta under a Phase II project, financed jointly by the Government of India and the UNDP. The original project is being executed, on behalf of the UNDP, by the United Nations. The new one will be carried out by the United Nations in association with F.A.O.

Of the amount earmarked by the UNDP for the original, overall Madras State groundwater project, more than half is being used to provide equipment and vehicles permitting the application of modern exploration techniques. For example, two rotary drilling rigs and two percussion drilling rigs, together with other well equipment and supplies, have been furnished by the UNDP. Other field and laboratory equipment supplied from abroad has included geological and geophysical apparatus to evaluate underground water conditions; instruments to record water levels; electric well-logging devices; and pump-setting units, trucks and other vehicles needed for project activities that range from Madras City southward to the Cauvery Delta.

Activities on the ground have been supplemented by an aerial photographic survey being carried out by a foreign firm. Flights were carried out in part of the project area in February and will be continued in December.

In the current Madras State project as a whole, specialists from India and six other countries are sharing responsibilities and daily activities.

As an integral part of the activities under the current project, advanced training is being provided to help meet long-term needs of Madras State. Training has progressed from lecture room to daily field operations, and specialised scientists are now able, for example, to help drilling crews get the maximum output. The training has covered specialities ranging from hydrogeology and geophysics to drilling, chemical testing and water management. In addition, advanced study abroad is being provided under UNDP fellowships. So far two fellows have begun a year's training in the United States in hydrogeology, in drilling and well construction and development.

In the coming Phase II project for the Cauvery Delta, the Government of India and the United Nations will continue to share in activities and responsibilities. UNDP aid during the next two and a half years will include the provision of a Project Manager and experts in hydrogeology, water management, drilling techniques, agricultural practices and soil sciences; equipment valued at some \$285,000; and fellowships for additional training.

In evaluating work under the current project and possibilities for the future, the Project Director says that more than 85 per cent of the surface water potential in the State has been developed. Even the fertile Cauvery Delta, with its established irrigation system, has some water-short periods. If ground-water sources there can be tapped and put to use, much of this deficiency can be made up.

## A NEW RECORD

THE Foundry Shop of the Bhilai Steel Plant created a new record by making 30 ingot moulds in a single day on July 9, 1968. This was an improvement over last year's record of 26 ingot moulds.

The Shop has a planned capacity of making 15 ingot moulds per day.



Crop that cheers. The farmer fondles his crop of maize. Left : Mahadeviah looks at the fruits of his labour

## A Mysore Village Smiles With Maize

Once a transport company manager, Mahadeviah, found his true calling in his ancestral occupation but he never wanted to leave his world as he saw it. He decided to make a mark and the result: the first maize crop in his village.

Text and Photographs  
by T.S. Nagarajan



NANJANGUD, Kabini, Kallamalli, Mahadeviah. Names that sound musical. Yes. These names lurk among the pleasant memories I have carried back after a recent visit to Mysore. They are associated with a simple delightful story of a pioneering farmer and the golden crop of maize that he raised for the first time in that region of Mysore.

Nanjangud is a beautiful little town, twenty kilometres to the south of Mysore, on the banks of the

Kabini, a tributary of the Cauvery. A dip in the Kabini at Nanjangud is held sacred because of a well-known temple of Shiva on its bank. The town has a lovely landscape.

I went to Nanjangud this summer. From the temple of Shiva, I drove along the Kabini bank. Farmers on either side of the Kabini grow paddy twice a year. In summer they grow either *ragi*, a millet popular in this part of the country, or groundnut. I saw a good crop of groundnut. Some farmers had harvested their crop. Near Kallamalli, a village on the Kabini bank, I was a little surprised. Amidst a dark green field of groundnuts, I saw a big yellow patch of hybrid maize standing ready to be harvested. A maize crop in this region of Mysore was news to me.

### Once a Transport Manager

Mahadeviah (40) is the man behind this. He is so much unlike a farmer. In fact barely seven

years ago, he was no farmer at all. He used to manage a lorry transport firm at Mysore. "I used to visit my village often, but I seldom looked at the lands belonging to my family", said Mahadeviah while narrating to me the story of how he became a farmer. In 1960 when his family assets were partitioned he decided to go back to his village to look after the land.

To switch over from transport management to agriculture was indeed a far cry. Mahadeviah, a matriculate, did not know even the rudiments of farming. His father was an agriculturist. Most farmers of Kallamalli were rather sceptical of how a terylene-clad city dweller like Mahadeviah would succeed as a farmer. But in a short period he became a model farmer.

### Canal Helps a Summer Crop

Mahadeviah's land, like that of his neighbouring farmers, is fed by a canal cut from the river at a high elevation near a village called Hullahalli, about 15 kilometres from Nanjangud. The farmers get water from the canal for seven months in the year from June to January. It is only when the canal is dry that they raise a summer crop of either *ragi* or groundnut soon after the first shower. But rain during this period is very uncertain. Therefore some farmers are reluctant to try to raise the summer crop.

"The uncertainty of rain bothered me much, but I made up my mind to solve this", said Mahadeviah. He found that even when the canal was dry, there was always a narrow stream in the river. Therefore he bought a pump, installed it on the river bank and pumped water from the river to his fields for his summer crop. The water supply was more than what he required. He offered the facility to his neighbours.

"But I was disappointed," he said. "None came forward to share the water. They argued that if the field was watered in summer, the land would not dry up for sowing the next paddy crop." For the first four years, none came forward to use the facility. Nobody except Mahadeviah raised a summer crop. His neighbours found that he could cultivate paddy after



Mahadeviah perhaps recalls his days as a transport manager when he drives his newly-acquired tractor. He has his own bullock carts to carry the maize to the market.

harvesting the summer crop without any difficulty. They came forward to share the water pumped up from the river. The pump which was set up to irrigate only the eight-acre plot of Mahadeviah began to serve 40 to 50 acres of land all around.

### A Pioneering Experiment

Mahadeviah's enthusiasm was roused. Last year he decided to try out the pioneering experiment. He decided to grow hybrid maize, a crop almost unknown in the region. He obtained the seeds from the agricultural inspector at Nanjangud and sowed them on a 3-acre plot. The result was encouraging: 21 quintals per acre. Mahadeviah's maize crop became almost a show piece. But, much to his disappointment, he could not sell the crop since no one wanted to buy something which they had not eaten before. He managed to sell a part of it in Mysore city.

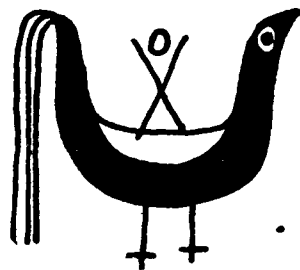
Mahadeviah would not retrace his steps. He repeated maize again this year on a six-acre area. The yield was more, 26 quintals per acre.

I asked him how he got a better crop this year. "The first year's experiment taught me some lessons in maize cultivation", said

Mahadeviah. "For my earlier crop, I watered the land first and then sowed the seeds. I found that all the seeds did not germinate fully. This year I reversed the process. I sowed the seeds first and then watered the land. Nearly 90 per cent of the seeds germinated", explained Mahadeviah.

To his pleasant surprise, he could sell the entire harvest in the market. His success attracted the attention of all his neighbours. They named his maize "hybridge", and decided to grow maize in large chunks of their lands.

"Even my eating maize bread instead of that of *ragi*, is slowly having its effect in changing the food habits of many in the village", he said. Maize is tastier and gives a larger quantity of flour per kg. Mahadeviah hopes that nearly 50 acres of land in the area will be under maize in the next season.



## BOOKS

### A Tale of Cheer

*Nandini* by B.S. Nirody. Publications Division, Ministry of Information & Broadcasting, Government of India. 167 pages. Rs 4.

S. Prasad

NANDINI is an unusual tale. The principal characters are all blessed with the Midas touch, so to say, turning to gold whatever they lay their fingers on. But the driving force is not greed, but a determination to prove themselves. It is the story of a family living in the green-and-mustard countryside, with its accent on physical labour. And the tale is aptly woven round the middle class, of the haves and the have-nots.

Nandini is the daughter of a village school master, Sajjan, who is faced with the problem of bringing up a large family on a small income. But he has a fertile imagination and the will to succeed. A kind destiny and the people around lend a helping hand. Nandini, thanks to the generosity of her employers, becomes a qualified nurse, instead of a maid-servant, the job for which she is sent by her

father to the town. The run of good luck continues and Nandini is able to make the future safe for her younger sister also, who finishes up as a doctor. One of the brothers wins a scholarship and is able to go abroad for study.

To complete this rags-to-riches story, Sajjan takes to fruit-growing in a big way. Nothing can go wrong for him now, and with grit and determination, he is able to build up a flourishing business. He wins a Government award, in the bargain. His greatest triumph, however, is that his wife, who once thought his schemes "wild", regains faith in her husband.

The story is told simply, without any embellishments of plot or language. There is no mistaking the didactic touch, about the need to have faith in oneself. There are, however, too many good people around in the plot which makes the school master's world seem a little unworldly at times. The proverbial dash of bitterness is missing. But if the object is to bring a message of good cheer to people living in a murky world, the novel eminently achieves it.

### A Rajasthan Block

*Needs, Facilities and the People—A Socio-economic Survey of Simalwara T.D. Block I* by N.N. Vyas and K.L. Bhatia. Published by Tribal Research Institute, Udaipur, 1967. 150 pages.

A. N. Mehra

THE volume in the special survey series of the 'Tribe' is a report on the socio-economic survey of Simalwara Tribal Development Block I which lies in the Sagwara tehsil of the Dungarpur district in Rajasthan. Both primary and secondary data were collected during the survey. The objective was to focus attention on the demogra-

phic and occupational characteristics of the people as also to examine the existing facilities and modes of utilising the resources.

The Block under study covers 21 panchayats and 115 villages with a population of 50,074. Out of 115 villages, 82 are entirely tribal villages and the remaining 33 have mixed population. There are wide disparities in the facilities provided in the tribal and mixed villages. For instance, only one out of the 7 dispensaries functioning in the Block is located in the tribal area, 5 post offices out of 13, 10 co-operative societies out of 29, and so on.

The demographic profile of the

Block shows that in the 94 families selected from 5 sample villages, the number of married non-tribal females exceeded married males while in the case of scheduled tribes and scheduled castes, married males outnumbered females. This situation is perhaps a result of the higher male mortality of non-tribal people compared with that of tribals. The report does not throw any light on such situations. It simply presents tables leaving it to the reader to draw his own conclusions.

The number of villages selected for canvassing of household schedules is too small to permit any plausible or valid conclusions.

Out of the 94 households included in the survey, 87 had land holdings and 7 were landless. The average land holding per household of scheduled tribes with 9.7 acres was more than double that for non-tribal households. The latter also suffered from acute fragmentation, as low as half an acre per holding.

The report shows that in all 108 teachers were working in 44 schools. Of these, nearly 77 per cent were non-local. The majority of the teachers were trained and about 11 per cent of them possessed graduate or post-graduate qualifications.

The publication leaves much to be desired from the point of view of analysis and presentation. No attempt has been made to examine critically the multifarious aspects of tribal development.

### SARVODAYA ANALYSED

*Sarvodaya: A Political and Economic Study—Adi H. Doctor.* Published by Asia Publishing House, Bombay. 227 pages. Rs. 24.

A. B. Bhattacharya

THE book is based on the author's doctoral dissertation that was presented to the Marathwada University in 1964. The author has made a comprehensive exposition of the political as well as economic aspects of the Sarvodaya philosophy, examined the compatibility of the political and economic proposals, and subjected the philosophy as a whole, to a searching analysis.

According to the author,

"Sarvodaya, the offspring of Gandhian ideology, is a system of social philosophy that aims at mobilisation of the physical, economic and spiritual resources at the disposal of society in the service of the general good. It differs from utilitarianism in that, while the latter aims at the greatest good of the greatest number, Sarvodaya seeks the uplift of each and all."

Sarvodaya is, really, an extension and an application of the Gandhian ideology to the solution of social, political and economic problems facing modern societies. In more precise terms, it is the art and science of mobilising the physical, economic and spiritual resources at the disposal of society for the service of the general good. Herein lies the superiority of Sarvodaya over utilitarianism; for, while the latter aims at the greatest happiness of the greatest number, Sarvodaya seeks the uplift or happiness of each and all. That is why Acharya Vinoba Bhave prefers the use of the word 'Antyodaya', meaning uplift of the last, to the word 'Sarvodaya'.

The concept of Sarvodaya con-

sists of mainly three aspects: the ethical, political and economic motivations. Earlier portions of the book deal with the need and justification of Sarvodaya. Dealing with the political aspect, the book points out that like other theories of social and political reconstruction, Sarvodaya also has started with a criticism of existing society. Sarvodaya criticises the very existence of the State and its functions, the Government, parties, elections, laws and all other aspects related with 'politics'. Naturally, all the pleas put forward against the political set-up of nations cannot be accepted in principle. Moreover, the 'Sarvodaya Political Order', too, remains a bare day-dream.

In the economic sphere, the entire Sarvodaya economy is founded on the philosophy of limited wants. Any economy worth the name must aim at promoting welfare. But the Sarvodayists believe that the nature of economy existing today is only materialistic in nature. It is unjust according to them—hence there is a need of change. The change, Sarvodayists

believe, should be of having a non-materialistic economy with maximum stress on welfare. So, here too, their views prove to be 'ideals' that cannot be achieved.

After discussing in detail the ethical, political and economic order, the author has made critical appraisals of all these. Finally, he has drawn the conclusion that "Sarvodaya is built on misconceived assumptions and, on the whole, is an unworkable Utopia, likely to defeat its own objectives." Yet this cannot obscure the fact that it is a political philosophy which, like any philosophy worth the name, does transcend its immediate background and historical setting and carry a message for the future. "Utopias may be unworkable, they may founder on the rock of reality; yet there is no Utopia from which man cannot learn something. Sarvodaya is no exception."

In studying the ethical, political or economic philosophy of Sarvodaya and of the assumptions and working of the concept, the author has given the sources of his material.

## FOURTH PLAN

### APPROACH— COMMENTS-6

# UNREALISTIC and INCONSISTENT

M. R. HAZARAY

It may be said, by and large, that though the three Plans have not failed totally, they have certainly gone wrong in several directions. Their strategy in the context of economic and political trends the world over was sound, but it has got bogged down in its implementation. Their theoretical formulations were correct, but the policies and procedures adopted to achieve the goals were found wanting on several scores.

The last two Plans held lofty objectives before us and achieved comparatively much less. The planning machinery was not perfected nor geared to take proper care of the problems that might arise from time to time in the course of the planning process. Take, for instance, the cost-push inflation, foreign exchange crisis and the recent recession. Purely doctrinaire approach to planning has so far resulted in the Plan-holiday for the past three years. The Approach paper rekindles the hope that economic realism has at long last begun to dawn upon the Government. The reorganisation of the Planning Commission may also be viewed as an indication of this realism.

### INDICATIVE PLANNING

However, the newly constituted Planning Commission in its advisory capacity should have kept before the country not only one but several alternatives feasible under the

present circumstances, taking into account the discernible future trends in the economy, especially because the Planning Commission gives us the impression that it is about to drop the concept of comprehensive planning and take up indicative planning instead.

The change in attitude to planning is welcome. The past three plans have already initiated the process of economic development, and the tempo of development must be continued. The indicative planning will be helpful here as it relies to a greater extent on market mechanism of incentives and prices than on highly arbitrary and patently unsound system of administrative fiat and detailed controls of the comprehensive planning. While confining the public sector to the development of essential infrastructure and certain basic industries, the indicative planning provides broad guidelines for the development of private sector, of course within the framework of planned priorities. The indicative planning can thus evoke co-operation and concerted action on the part of both the public and private sectors.

### MEANING OF THE ENDS

The Approach sets forth three main objectives, namely i) growth with stability, ii) movement towards self-reliance as speedily as possible, and iii) achievement of regional balances. All these objectives, as usual, are in terms of the high political aspirations keenly felt by the people. It is difficult to find

fault with them as ends in themselves; but our concern is not with the ends, but with the means and their availability to achieve these ends.

The objective of 'growth with stability' implies that so far there was growth with instability, meaning thereby growth with inflation and its attendant evils. It points at several sectoral imbalances that must be rectified in the years to come. Is it possible to do away with these imbalances without further resort to inflationary finance?

The second objective, 'movement towards self-sufficiency as speedily as possible', at least in today's context, means two things: i) self-sufficiency in food supply, and ii) self-sufficiency in foreign exchange resources.

Self-sufficiency in food has to be considered in the context of rapidly rising population with rapidly rising money income in the hands of the people. To achieve self-sufficiency in food within the next three or four years, the country will have to fight very hard on both the fronts of production and reproduction. At present there is lack of concerted action on both.

Self-sufficiency in foreign exchange would mean doing away with foreign aid. For this several alternatives may be followed. For instance, we may import more and export more, which we cannot do when both imports and exports are inelastic in their demand, availability

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BISCUITS**

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Mr Hazaray is Head of the Dept. of Economics, Siddhartha College of Arts & Science, Bombay.

apart. Or, we may import less and export more: this is the urgent need of the hour to take care of our balance of payments position, but reduction in essential imports may affect our export promotion programme. As a third alternative, we may import less to bring the imports in line with our lessened exports: this will clearly come in the way of our further economic development. Or, we may go on importing more for development and exporting less, as we have done so far; but we have by now realised that this can hardly pay our way to development. Thus, the problem of self-sufficiency within a short period is going to be a very difficult problem. Even the self-sufficiency in food based on the new strategy of agriculture is import-oriented, for it may involve imports of fertilisers and tractors.

The 'achievement of regional balances' means doing away with the disparities of incomes and wealth between the States and between the different parts of the same State. An impression has gained ground that the Five Year Plans have increased the gulf not only between the rich and the poor but also between the rich and the poor areas of the country. Three main causes may be attributed for such regional disparities. They are:

(1) Inadequate attention to urban development. Ashish Bose has rightly observed (*Yojana*, June 23, 1968) that our planning process has so far failed to come to grips with the problems of urbanisation in the context of economic growth and social change. It is common knowledge that the whole question of urban land values is linked up with black money which is used in the land market in a big way. The Approach at least recognises the existence of this problem when it says, "One of the largest existing sources of unearned increments in income and capital is the increase in the land values in developing urban centres. The mopping up of these warrants early attention". What is needed is not only early attention but prompt action in this matter.

(2) Inefficient working of the co-operative sector. It is well-known that only a few well-to-do people

in the villages have benefited by the co-operatives.

(3) Inefficient working of the public enterprises. Even on the basis of long run consideration, the heavy expenditure on the public enterprises and the Government departments connected with them has created islands of disparities all over the country. An overall expenditure of Rs. 2500 crore on these enterprises has not yielded even the minimum return of 2.5 per cent per annum.

## AGRICULTURAL STRATEGY

The Approach has tried to concretise these nebulous objectives in what it calls the attainable targets based on *reasonable* calculations. (Italics are mine). (1) It assumes that it "might be reasonable" to expect a growth rate of 5 per cent per annum in agriculture. (2) It further assumes that industrial sector is also "capable of growth at a rate of 8-10 per cent per annum and that it appears feasible". (3) It states that an overall rate of growth of 5 to 6 per cent per annum (compound) appears feasible. (4) Its broad calculations reveal that to reduce net foreign aid to a half of its present level, it will be necessary to raise exports by about 7 per cent per annum. (5) It further states that for a 5 per cent rate of growth, the average rate of domestic savings will have to be stepped up from the current level of 8 per cent to around 12 per cent of national income. (6) And, finally, it assumes that all imports of foodgrains under concessional terms such as under P.L. 480 would cease within the next three years.

All this compound arithmetic veers round the five per cent compound rate of growth per annum, which is regarded as almost inevitable and must be attained in spite of the anaemic resource position. Perhaps this may be due to political compulsion on the part of the Government in power.

The basis on which these targets are formulated is flimsy. The record crop of this year may be a good indication of times to come. The beginning of agricultural revolution in the countryside, perhaps, is beyond doubt, but it cannot be taken for granted that

the tempo of this revolution will be maintained automatically at the growth rate of 5 per cent. It may be noted that the index number of agricultural production has not risen above 2.5-3 per cent since 1960-61. It requires sound and timely policy measures to support and maintain the tempo. There is a great demand for fertilisers, hybrid seeds and tractors in the countryside, but the question is whether the Government will be alert enough to meet this demand fully within the given time.

Steadily rising incomes must be assured to farmers over the years to come, in spite of the rising trends in the supply of agricultural commodities. This may necessitate the maintenance of buffer stocks to stabilise the level of agricultural prices, and also the general price level. The maintenance and operation of buffer stocks (provided regular supplies are assured both from home and abroad) on a much larger scale than hitherto is going to be a hard experience in the years to come. The readiness on the part of the States, surplus or deficit, must also be taken into account to make the policy of buffer stocks a success. Even after we are able to overcome the political hurdles, the fixation of prices will not be an easy task. At present the prices of agricultural commodities are fixed on the basis of average for the past three years, and the procedure is mechanical. In future a policy will have to be adopted to carry the agricultural revolution to its logical conclusion; the crop pattern will have to be made more rational, encouraging commercial crops, once the national minimum standard of food is achieved. It is only in this way that farmers can be made to plough back their increased earnings. It is again only in this way that agro-based industries can be promoted to feed medium and large-scale industries which, in turn, may help conservation and augmentation of foreign exchange.

## INDUSTRIAL GROWTH

Similarly the Approach visualises a growth rate of 8-10 per cent in the organised industrial sector even though over the past three years it has stagnated around 3 per cent. For such a rapid rate of

growth, the Industrial Policy Resolution of 1956 is to continue to govern the main policy of industrial development. Granted that the strategy of industrial development during the Fourth Plan is sound, the Industrial Policy Resolution itself needs to be modified in several respects. The watertight compartments of private and public sector industries should go. A national minimum wage policy should be adopted to improve the management-labour relations. The oppressive tax rates should be reduced to widen the tax-base, and many more fiscal incentives will have to be devised to increase both the productivity and profitability of enterprises both in the private and public sectors. There is little indication about these in the Approach.

The high target of industrial production seems to have been based on two assumptions: (1) improved supplies of raw materials from agriculture, and (2) full utilisation of the industrial capacity which is under-utilised at present. Though the first assumption may prove valid if the agricultural revolution is maintained, the under-utilisation of capacity may continue for various reasons, such as (a) lack of requisite raw materials, (b) lack of effective demand for the products, (c) uncordial labour-management relations, and (d) wrong Government policies such as high level of profit taxes and excise duties. Full utilisation of capacity will be achieved to the extent these causes are removed.

The high rate of industrial growth is said to be possible because the present industrial structure is more diversified than in the past, and industrial licensing policy is to be liberalised and made more selective. Even so, the Approach takes recourse to the increased use of public agencies for the import of the bulk of raw materials and their distribution and for promotion of exports, the efficiency of which needs improvement even according to the Planning Commission.

The targets fixed for exports are unattainable. Our export promotion programmes have a record of failures over the past decade. Yet the Approach finds it necessary to raise exports by about 7 per cent

per annum. Again, the 5 per cent growth rate makes it all inevitable, even though during the period from 1958-59 to 1964-65 the rate of exports hardly went up beyond 4.5 per cent, on the Planning Commission's own reckoning.

The 5 per cent growth rate necessitates financial resources of nearly Rs. 200 crore every year in the public sector, and Rs. 300 crore for a 6 per cent growth rate. These resources are to be raised through loans, public enterprises, price adjustments, savings in the rural areas and additional taxation. Though it is believed that industrial taxation has reached its limit, surprisingly the Approach does not contemplate agricultural taxation. Similarly the extent of deficit finance goes unindicated.

In conclusion, it may be pinpointed that our planning should be absolutely realistic. Lowering the targets in conformity with the

availability of resources in physical and financial terms is necessary to avoid future frustration. One can, however, go a step further, but one need not take a leap in the dark knowingly. Though the first three Plans have set the ball of development rolling, the people are losing faith in the manner it has been brought about. The planners have been promising too much, but too little is achieved actually. Hence the imperative need to be more realistic. The targets should not be a matter of political compulsion; economic feasibility within a given time should be their first and foremost consideration. It should also be realised that the implementation in the right spirit is more important than the formulation of a Plan. The constant scrutiny of the entire Plan machinery and its policies and procedures with regard to objectives must be regarded as *sine qua non* to avoid ruts into which planning is likely to get stuck.

# UNEMPLOYMENT PROBLEM GOES UNHEEDED

V. A. VASUDEVARAJU

THE 'Approach' is a good example of essay writing in economics, but it offers no concrete remedies to many pressing problems of the Indian economy, such as labour and employment.

A manpower programme is the core of any plan for the economic development of a country. Labour is a 'resource'. To some extent waste of manpower is characteristic of a developing economy. But, rarely, if ever, has it taken place on such a colossal scale as in India. Yet there is no sincere attempt to solve the unemployment problem. Our Five Year Plans have highlighted the problem, but failed to find a solution. The 'Approach' says, 'provision of larger employment opportunities is one of the main objectives of a plan of development',

but it leaves the matter just at that. At another place the 'Approach' points out the fact that 'the Indian economic situation calls for a very widespread increase in non-farm employment' and hopes that 'non-farm occupations should grow at a much higher rate than that of the labour force'. Apart from repeating such expressions which are found in the text of the previous Plans also, there is nothing new in the Approach.

Most economists and planners in our country believe that a certain rate of investment in the economy will lead to a certain rate of growth and development which will create employment opportunities and solve the unemployment problem. This sort of 'global-investment-growth-employment-ratio' has not proved reliable in our country in the past. Eradication of unemployment is not a simple arithmetic in our country. Yet no serious attempt has been

Mr. Vasudevaraju is a Lecturer in Economics, G.V.N. College, Kovilpatti, Madras.

made to analyse the unemployment problem and point out its special features and characteristics.

The past performance of our Plans does not offer any guidance to solve the unemployment problem. The Third Plan initiated two new experiments, namely the Rural Industrialisation Projects and the Rural Works Projects, with the avowed objectives of 'broadening and diversifying occupational structure and creating, maintaining and expanding non-agricultural employment in rural areas' in the first experiment, and, 'providing employment on supplementary productive works in rural areas having a heavy incidence of unemployment and underemployment and, in the process, creating assets to strengthen the rural economy' in the second. That these projects have failed in their main objectives cannot be gainsaid. The 'employment approach' has not received due attention at the project level, not to speak of their other serious drawbacks.

The 'pilot project' approach followed in these two programmes and their 'experimental' nature have not helped in coming to grips with the unemployment problem. The problem would assume alarming proportions when there would be an addition to the labour force to the extent of 23 million in the Fourth Plan and 30 million in the Fifth Plan, with a backlog of 12 million at the end of the Third Plan.

The Third Plan has frankly admitted that 'the existing data are inadequate for building up a sufficiently detailed picture of the state of employment for the country as a whole and in its regional, urban and rural aspects'. The main question is, how far the 'Approach' has made good this important deficiency. I believe that the Planning Commission has nothing to its credit in regard to the studies of the type and extent of unemployment, area-wise and sector-wise, in the country. The present practice of treating the country as a whole to solve the unemployment problem is dangerous. The macro-approach will not help us in finding out the proper remedy. What the country needs is a 'micro-approach with macro-comprehension'. The 'Approach' is disappointing in this respect.

In respect of other sectors like agriculture, industry, export and foreign aid, the 'Approach' specifies the percentage of increase or decrease that should be achieved in the Fourth Plan. But it does not spell out any such percentage to eradicate unemployment. This is a dangerous lacuna in our planning. The Fourth Plan should take a fresh look at this problem in its proper perspective. The problem should be assessed in each State, district and block by undertaking careful scientific studies and steps should be taken to integrate agricultural, industrial, irrigational, rural works and electrification programmes with employment programmes.

A determined and integrated attack on unemployment would necessitate the development of indigenous capital and techniques and the production of goods our people need. The huge population of our country offers a wide market. After all labour too is a means of production. If only our Plans could make all the able-bodied men produce and consume all the goods and services necessary for them for a decent living, it would lead to the growth of a sound national market which would provide the basis for the success of the Plans. But the 'Approach' has nothing to say about the development of the national market. On the contrary, it emphasises the expansion of the

'export market' and an increase of exports by about 7 per cent per annum. Are we going to develop our economy relying mainly on the export market, or by broadening and strengthening our national market? This is a basic policy decision to be made by the Planning Commission and the Government.

The 'Approach' does not offer any attraction to the common man. It aims at certain rates of growth in different sectors of the economy. But it makes no sense to the common man on whose participation and sacrifice the ultimate success of the Plan depends. Any plan, which makes no promise of fulfilling the basic necessities of the people within a given period of time, cannot generate the necessary enthusiasm among the people and motivate them to work for its success. This is another major defect of the 'Approach'.

The 'Approach' is also silent on the changes that the administration—an instrument of development—has to undergo in the context of economic development. The present structure, rules, procedures, approach and methods of the administration are incompatible with the demands of economic development. A radical change in our administrative structure and procedure is a must for the success of the Plan.

THIS  
THEY  
THINK

Our readers continue to send us  
their views on the IV Plan Approach.  
This is the Fourth Instalment

## White Elephants in Industry

THE Approach desires to make the maximum use of capacity in industry. The programme of industrialisation aims at: (1) providing industrial and technological capacity and competence needed for self-reliant industrial progress; (2) developing capacities in directions appropriate to the export performance and import limitations; (3) organising capital and personnel

resources in such a way as to achieve as much widespread industrialisation of the country as possible.

No doubt these objectives and the sense of urgency underlying them is good, but it would not be fair to club the private and public sector enterprises together. There is much to commend in the dichotomy of functions in public sector undertakings. The dichotomy scheme will succeed only if the politicians keep their hands off and if there is less bureaucratic approach to problems. There are some Government

undertakings which have become adjuncts to Ministries and are treated in the same manner as a subordinate Government organisation. Consequently, they are subject to the usual red-tape and procedural delays.

Persons chosen for the top and middle management posts should be those who are thoroughly acquainted with the business they have to manage and who possess initiative and drive. There should not be any room for rule-of-the-thumb, trial and error and hunchy methods. A planned programme will have to be launched to build up a cadre of capable managers, trained both for administrative and technical jobs.

A key element for the achievement of maximum level of efficiency is discipline and morale of the labour in public enterprises. This may be possible if political interference from outside could be eliminated.

Dharwar (Mrs.) LAKSHMI VENKATARAM

## Public Co-operation

ECONOMIC development does not mean merely the formulation of programmes and their implementation by the Government; it also calls for sacrifice and co-operation by the public on a war-footing. No country has ever developed without sincere efforts by the people. Unfortunately, this is what is lacking in our country, and also what is lacking proper attention in the Approach. In India the people are more conscious of their rights than of their duties. And this is the main cause of the unrest in almost every field of economic activity which, in turn, impedes the development of the country.

Now that we are on the threshold of the Fourth Plan, heading towards the goal of "growth with stability" in the context of an economy surrounded by unfavourable and discouraging elements from outside, the importance of internal effort should have been duly emphasised in the Approach. Whether it is a question of earning foreign exchange by increasing exports by 7 per cent or of raising the rate of domestic savings from 8 to 12 per cent, we have to

motivate our people to work sincerely. To counter the poverty and backwardness in the country, a vigorous attack with the spirit of sacrifice is needed. Each unit of labour has to be turned into capital.

Ludhiana

R.R. PAUL

## No Incentives

THE Approach, which has confined itself only to three limited purposes, has, however, failed to offer anything new in its approach to the problems besetting the country.

In the field of agricultural production, for instance, the question of offering incentive prices to farmers, particularly for growing high-yielding varieties, is not touched at all. In the absence of incentive prices and better marketing facilities, the high-yielding varieties programme is not likely to attract small farmers, and no amount of sermons is going to achieve the target in food production without active participation of small farmers.

As for additional resource mobilisation, the Approach should have laid greater emphasis on tapping the agricultural sector which has been a major beneficiary of planned investment in the past 15 years. Considerable resources could be raised by increasing the irrigation water rates, charging commercial rates for power used for agricultural purposes, and levying direct taxes on the profits earned through raising of orchards, grapevines and other fruit crops. The Approach has not explored any such new avenues.

In the field of industries, adequate emphasis is not laid on the need for increased investment in consumer goods industries. It is common knowledge that inflationary pressures in India are abetted by shortages of consumer goods. It is high time that the common man is catered or instead for capital industries.

Lastly, administrative efficiency is an essential precondition for the success of any Plan and to a considerable extent our failure in the past is due to the failure of the administrative machinery. The Approach has ignored this aspect totally. In the existing circumstances there is a great need to provide incentives and rewards for good work and to awaken interest in the minds of adminis-

trators for achieving quick and better results.

Anantapur

H. HANUMANTHA RAO

## Allocations Vague

OBJECTIVELY and strategically the new approach is more or less the same as it was in the old Fourth Plan, with a slight difference in its presentation. But objectives and strategies can be carried out successfully only when resources allocated to a particular head or area of development are commensurate with the requirements. In the past it was this mis-handling of resource allocation that was responsible for the glaring contradictions, imbalances, and crisis that our planning has produced.

No trace of monetary allocation of resources for particular area of development is found in the Approach. Though areas of development are listed one by one under different heads, the amounts of investment and resource mobilisation from various sources have not been specified. Indiscreet and politically motivated resource mobilisation and allocation create imbalances in the economy.

It is time we recognised the hard economic realities and needs if we wish to avoid another Plan failure. Any economic theory or practice based on soft political ideologies and practices can hardly be successful. It is a big challenge to the reconstituted Planning Commission to exercise its influence directly and indirectly both on the National Development Council and Parliament so that policies with regard to resource mobilisation and allocation are formed realistically and are based on the principles of economics rather than on those of politics.

Udaipur

M.L. DUNGARWAL

## Deal To Weaker Sections

THE Approach has assigned the task of development of weaker sections to three sectors—States, co-operatives and voluntary organisations. The obvious limitations of fiscal, pricing and other policies to curb maladjustment of economic power have been realised rather late. In fact, fiscal and pricing policies are much too sharp to auto-

matise adjustment of economic disparity of various sectors and various sections of people, because their negative effect always jeopardises investment and capital formation. The Fourth Plan Draft Outline (of 1966) advocated the Area Development Approach to combat economic poverty of weaker sections. The Planning Commission now lays emphasis on employment by promoting the development of agriculture, through irrigation, reclamation of land, more use of high-yielding varieties of seeds and other inputs. What would be more realistic is not to bring about an overnight change in the traditional way of life and methods of cultivation but to introduce a slow and steady change in their economy and social life. The primitive method of shifting cultivation followed by the Baiga, Muria, Bharia and other tribal communities of Madhya Pradesh and the Akas of N.E.F.A. is based on plot rotation rather than on crop rotation. This is harmful to the forest as it causes soil erosion.

Traditional institutions of the tribal communities should be utilised for bringing about any institutional changes in the agricultural and social set-up of the tribal people. For example, Gotul Farm Co-operatives should be set up for Murias of Bastar (Madhya Pradesh). (Gotul is a dormitory for Muria youths).

Since the tribal people live mostly in forest villages, the development of forestry and forest-based industries can greatly help to improve their economic condition. The Scheduled Castes form the bulk of agricultural labour. Hence improvement in agriculture by way of enhanced labour wages and distribution of land to the landless can help the economic uplift of these people. The Approach seems to have overlooked this aspect of welfare of the backward communities. It should have dovetailed agriculture and forestry with the agro-based and forest-based industries respectively.

The setting up of big plants and factories in tribal areas helps only the uprooting of the tribal people and settling them elsewhere. On the contrary the small-scale industries based on agricultural and forest produce will provide adequate

employment to tribals in the initial stages. Besides the tribal people will come in touch with technological process of industrialisation which will be more conducive to the industrialisation of the area and will bring economic benefit to the local population.

The Approach to the Fourth Plan should be more oriented to social development and more practical to strike at the problems of the people and the areas so far as the schemes for welfare of the Scheduled Castes and Scheduled Tribes are concerned.

Mandla (M.P.)

M. L. PATEL

## Tribal Welfare

REGARDING the weaker sections, the 'Approach' rightly observes that it has been the experience that whether these categories inhabit in a special area, such as tribal blocks, or are integrated with the rest of the population, they obtain relatively little assistance from the general programmes. Therefore, intensive efforts have to be made 'from below' as every scheme is to be implemented at that level.

The Dhulia district has 38 per cent of Scheduled Tribes and 3 per cent of Scheduled Castes in its population. Since 1952, C.D. Blocks are functioning in this area. But still much remains to be achieved.

The following suggestions are made after interviewing workers and leaders in this area:

1. The scheduled area is not yet suitable to have Panchayati Raj institutions. The work should be entrusted to their own traditional village Sabhas. A sociological study is necessary. The present leaders should be given proper training.

2. Tribal Blocks expect 25 per cent local or peoples' contribution which is prohibitive for the tribals. Therefore for some years work in these areas should be conducted with the spirit of service, without expecting any contribution from the people.

3. Rules of reappropriations applicable to normal C.D. Blocks should not be made applicable to tribal areas. These rules have already come in the way of building the badly needed roads connecting taluka places and marketing towns.

Dhulia

S.R. HAWALDAR

## TESTING STEAM TURBINES

THE Heavy Power Equipment Plant of the state-owned Bharat Heavy Electricals at Ramachandrapuram, Hyderabad, has added one more achievement to its credit. On the plant's test-bed is the 60 MW Steam Turbine with a rated speed of 3000 rpm. This turbine will be despatched to the Harduaganj thermal power station in Uttar Pradesh.

This is the first time that a test-bed for a heavy Rotating Plant had been erected completely in India by Indian engineers and technicians. The test-bed is the only one of its kind in India, now in commission.

Turbines up to a maximum rating of 110 MW can be tested and provision has also been made for extending the test stand to test turbines of 200 MW capacity. The auxiliaries can be operated by remote control from switch board provided at convenient locations.

The test-bed is big enough to allow testing of a turbine in one half and simultaneous assembly or disassembly of another turbine in the other half.

And this is the first time that a steam turbine of this size manufactured in India is being tested in its own test-bed. The moving parts, namely the high pressure and low pressure rotor of the turbine, together weigh about 20 tonnes.

## CRANE CONTROL

INDIA is fast nearing self-sufficiency in crane electricians and in advanced know-how for designing main circuits, systems and controls for the crane industry, which has been classified as one of the 25 "key" industries by the Government of India.

Precious control, safety and reliability of the highest order are absolutely essential in crane operation, and hence complicated but reliable and easy to maintain control schemes have to be developed for crane users. Associated Electrical Industries has announced that it can now indigenously design and offer a complete range of sophisticated control and regulating systems for a.c. cranes.

## Development Diary

- The 2,650-tonne hydraulic forging press complex, in the foundry forge plant of the Heavy Engineering Corporation, Ranchi, has been commissioned. The H.E.C will now be in a better position to manufacture and supply heavy forgings to the Bokaro Steel Plant. The press will save Rs 5 crore in foreign exchange when it reaches full capacity.

- Rich deposits of iron ore have been located in the Toshana area of Haryana.

- Under an agreement signed in New Delhi, the SKODAEXPORT of Czechoslovakia will supply machinery and equipment valued at over Rs 2 crore to the Heavy Plate and Vessels Works at Visakhapatnam. The agreement also provides for necessary technical assistance for the erection and commissioning of the plant.

- The Gujarat Government has set up an Investment Corporation with an authorised capital of Rs 10 crore to lend and invest money in industrial concerns within the State.

- The Gujarat Small Industries Corporation is to undertake manufacture of scooters in the small-scale sector. It will encourage small manufacturers to make the components which will be assembled in the Corporation's workshop. The first scooter is expected to be out by the end of next year.

- Work has started on India's largest underground power house in Kerala. It is part of the Idikki hydel project, being constructed with Canadian assistance. The power house, deep inside Neduguni Hills, will be accessible by a tunnel 2,000 feet in length. It will consist of a single large cavern in which six hydro-electric generating units and transformers will be installed.

- The State-owned Shipping Corporation has launched a new service from India's west coast to Australia. With this, the Corporation provides

20 cargo line services to different parts of the world.

The new service also provides a direct link between the West Coast and Indonesia. The vessels in this long awaited service are specially equipped to promote the export of shrimps and frogs.

- The State-owned Gujarat Refinery near Baroda has reached the three-million tonne production mark. All the crude oil from the Gujarat fields—Kalol, Ankleswar and Nawagam—is now being processed by this refinery. The refinery, set up in 1966, had an initial capacity of two million tonnes.

- Seven ports have been selected for intensive development in Mysore. One of them is Malpe, for whose development a Rs 2.4 crore project has been drawn based on Yugoslav expert advice.

- West Germany has signed an agreement to advance a loan of Rs 46.88 crore to India in fulfilment of its commitment made to Aid India Consortium. Out of this, Rs 32.75 crore will be extended in the form of loans repayable in 25 years and Rs 10.98 crore in 10 years. A part of the credit will be utilised for the import of fertilisers and raw materials necessary for the maintenance of the economy, including agricultural production.

- The Gujarat Industrial Development Corporation has evolved a scheme to enable craftsmen, technicians and qualified entrepreneurs to set up industries of their own. Under the scheme, the State Bank of India will provide loans up to a lakh of rupees and the Corporation will provide factory sheds on hire-purchase basis. The Corporation also proposes to set up rural workshops all over Gujarat State, which will be leased out to enterprising young technicians and others who desire to run them as repair shops for agricultural implements, tractors and automobiles.

- Water has been released in the Gandak canal in Bihar, on a trial

basis, one and a half month ahead of schedule.

- India has signed an agreement with a Japanese firm, Mitsubishi Heavy Industries Limited, under which the firm will prepare a revised project report for the Cochin Shipyard.

- The Bihar State Government has decided to set up Agricultural Development Corporations in each of its 17 districts to handle distribution of agricultural inputs among farmers.

- Under an agreement signed between India and Japan in Tokyo, India will receive \$45 million as aid from Japan, of which about \$17 million will be adjusted towards rescheduling of old debts.

- The trade agreement between India and Greece has been extended up to the end of 1968.

The trade agreement was first signed in February 1958 and has since been extended from year to year.

- In Assam, 2.40 lakh hectares of land are to be covered by minor irrigation schemes during the Fourth Plan period. For this purpose 20,000 pump sets will be installed and 1,000 tubewells dug.

- A seismological observatory has been set up at Sundernagar in Himachal Pradesh in the Beas Project area. This is one of the ten such observatories which will ultimately go into operation in the area. Equipped with highly sensitive instruments, the observatory is capable of picking up ground vibrations caused by near and distant earthquakes and also record even very feeble tremors which may occur in the surrounding area. The data from the observatories will supply detailed information on the seismic status of the Beas Project area which is located in the highly seismic Himalayan Belt.

- The Agricultural Research Institute at Barrackpore near Calcutta has evolved a new variety of jute seed known as JRO-878. It is a hybrid between Sudan Green and JRO-690, the traditional variety.

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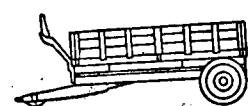
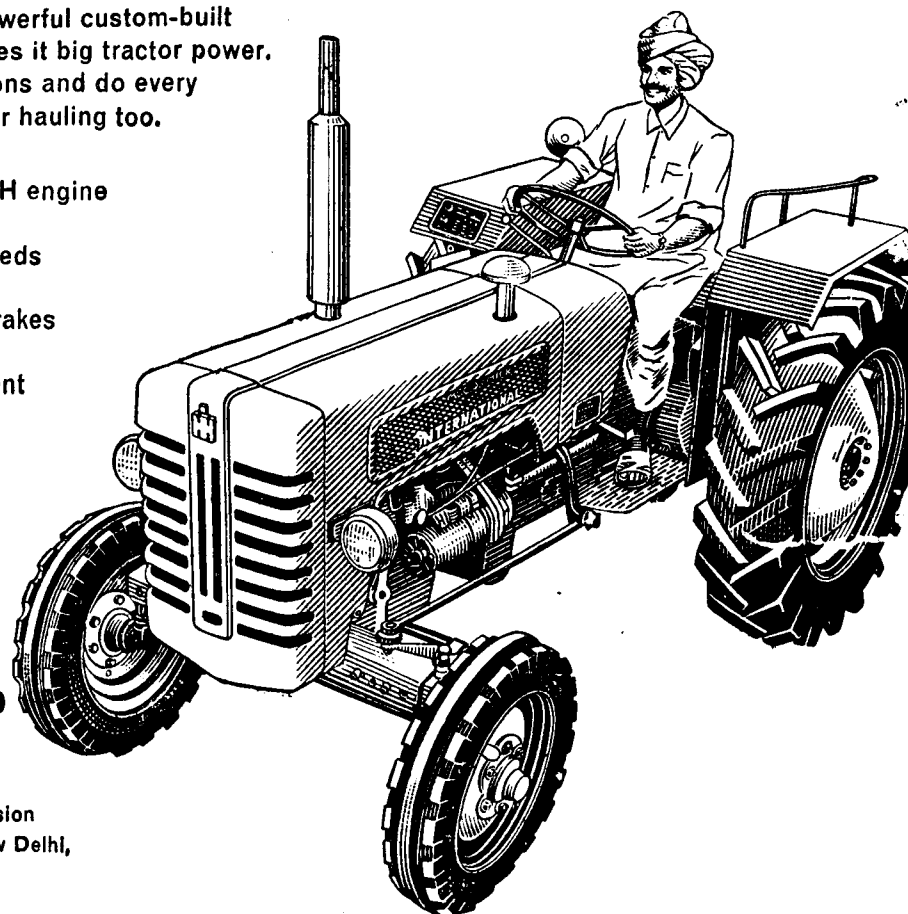
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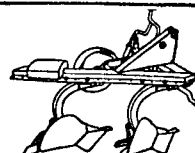
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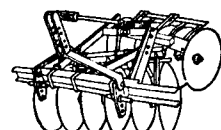
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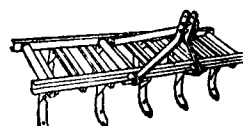
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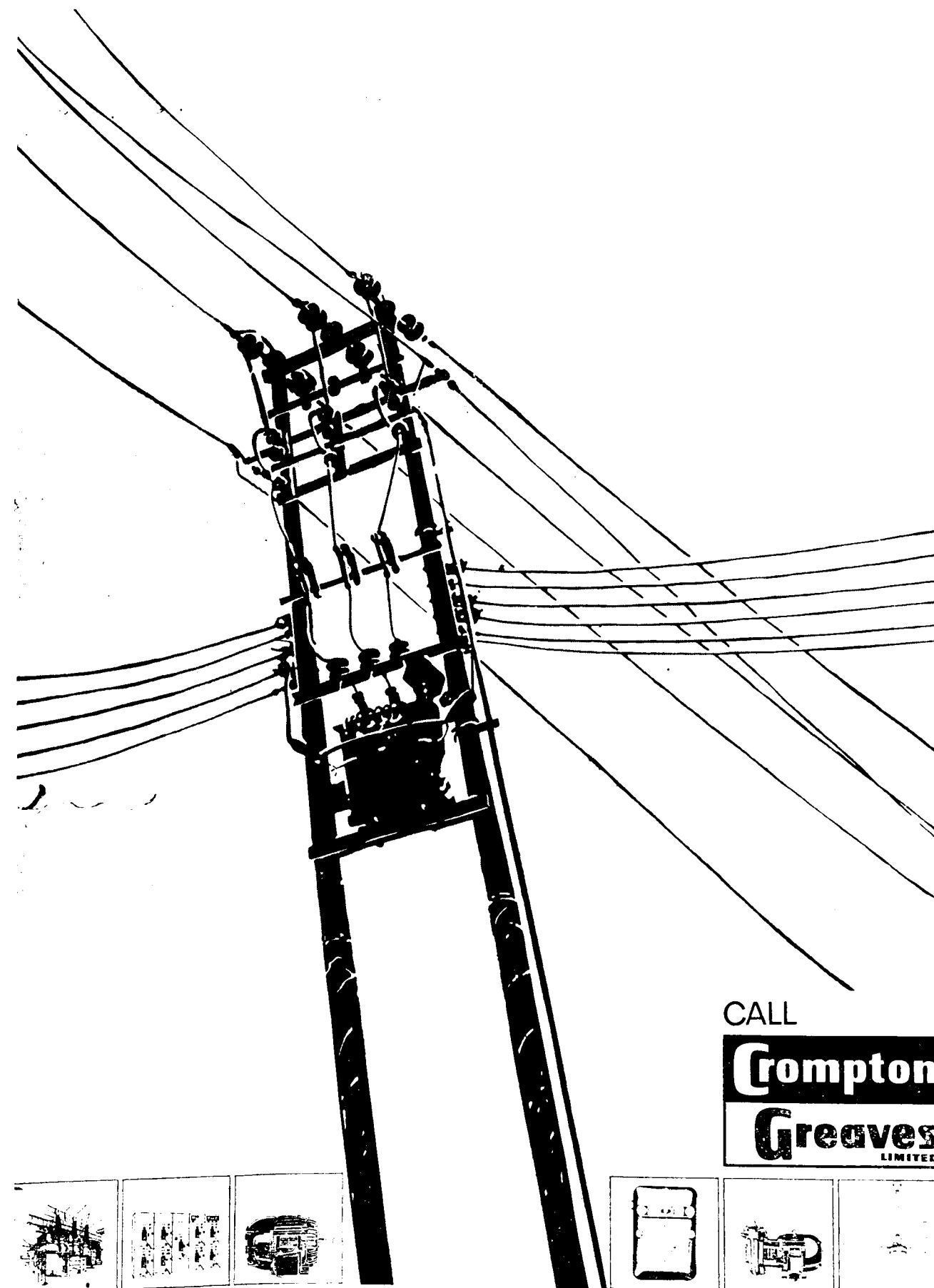
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# Strides in family planning

One baby is born every one and a half seconds in India. Thus 21 million babies are born in a year and the net addition to our population is 13 million a year. The country has made a great progress during the past 15 years but fruits of the economic development are offset by the growing population. For instance, in spite of the increase in food production during this period, the per capita consumption of food has gone down, from 12.8 oz. to 12.4 oz. A countrywide Family Planning Programme was launched in the Second Five Year Plan to check the population explosion.

Expanded through the Third Plan period, the Family Planning Programme now seeks to cover 90 million couples in the reproductive age group. A network of family planning services has spread over the country to reach the remotest village.

For a period of 10 years starting with 1966-67, the States have been assured of 100 per cent assistance for all non-recurring and recurring expenditure on training, education, publicity, compensation and contraceptives for the implementation of the family planning programme.

A provision of Rs 31 crore was made for the family planning programme in 1967-68. The Fourth Plan envisages an outlay of Rs 229 crore for the purpose.

There are now 1,651 family planning welfare centres and 22,748 rural centres and sub-centres in the country. Of these, 71 urban and 4,634 rural centres were set up in 1967-68, besides 321 static and 138 mobile IUCD units and 71 mobile sterilisation units. In addition, 9,540 other medical institutions, hospitals and dispensaries are giving advice on family planning and supplying contraceptives.

The District Family Planning Bureaux in every State have been strengthened by mobile surgical sterilisation units which visit villages for organising vasectomy camps.

In 1968-69, it is proposed to open 500 additional rural family planning welfare centres and 4,950 sub-centres, 30 district family planning bureaux and 4 additional training centres.

The number of sterilisation operations has been rising from year to year. More than 1,385,000 operations were carried out in less than ten months last year, as against 868,367 operations performed in 1966-67. During the same period 562,530 loop insertions had been performed.

The cumulative total of insertions since the inception of the IUCD programme is 2,232,546. Punjab has marked the highest performance, followed by Haryana.

The number of sterilisation operations performed so far is 3,779,278, of which 80 per

cent are vasectomy and 20 per cent tubectomy. Maharashtra's achievement is the highest among the States.

There are five Central Training Institutes to train extension educators and other categories of family planning workers. Besides, 46 State family planning centres are to be set up, one for every 10 million population. Of these 41 have already been established.

The Government has issued licenses to private firms for manufacturing 150 million condoms (Nirodh) a year. In the small-scale sector, 4 units have been set up with a capacity of 60 million condoms a year.

The Central Government has established a factory at Trivandrum which will manufacture 144 million pieces of Nirodh every year initially, and 288 million pieces when fully developed. The factory will go into production by the end of 1968.

To place Nirodh within easy reach of all, its price has been fixed at 15 paise for 3 pieces. In rural areas its distribution is free.

A mobile audio visual van equipped with projectors and films is being supplied to each district family planning centre for educating the people.