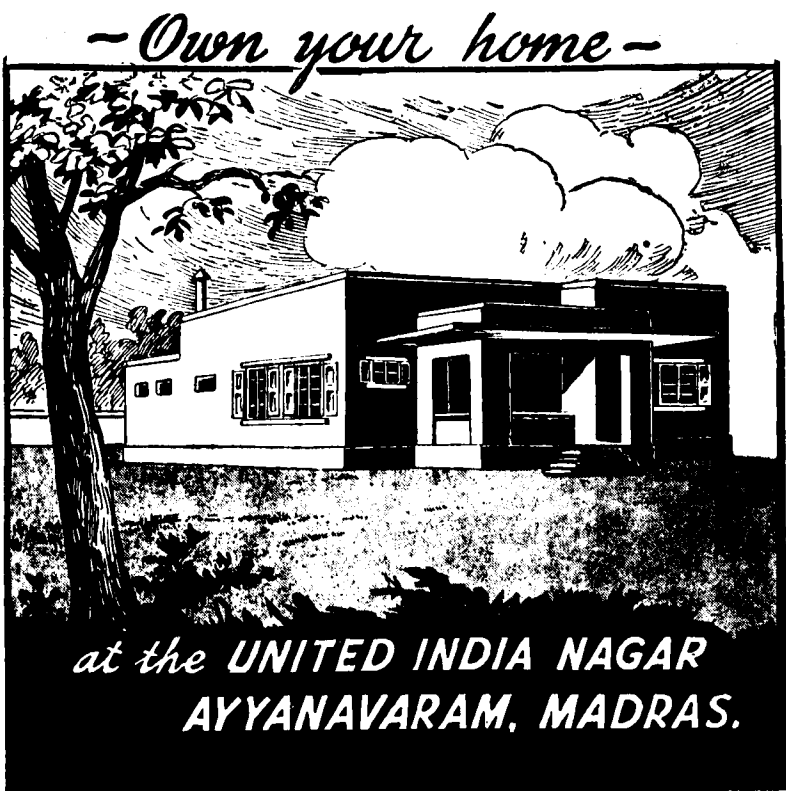




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PEOPLE'S HEALTH

A Pioneer in the field of Public Health

Vol. I

DECEMBER

No. 3

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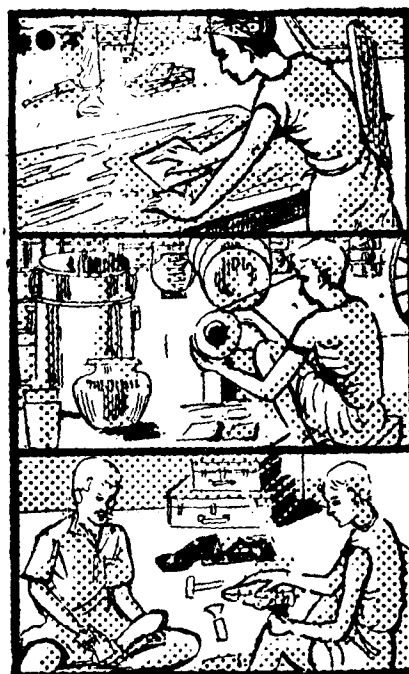
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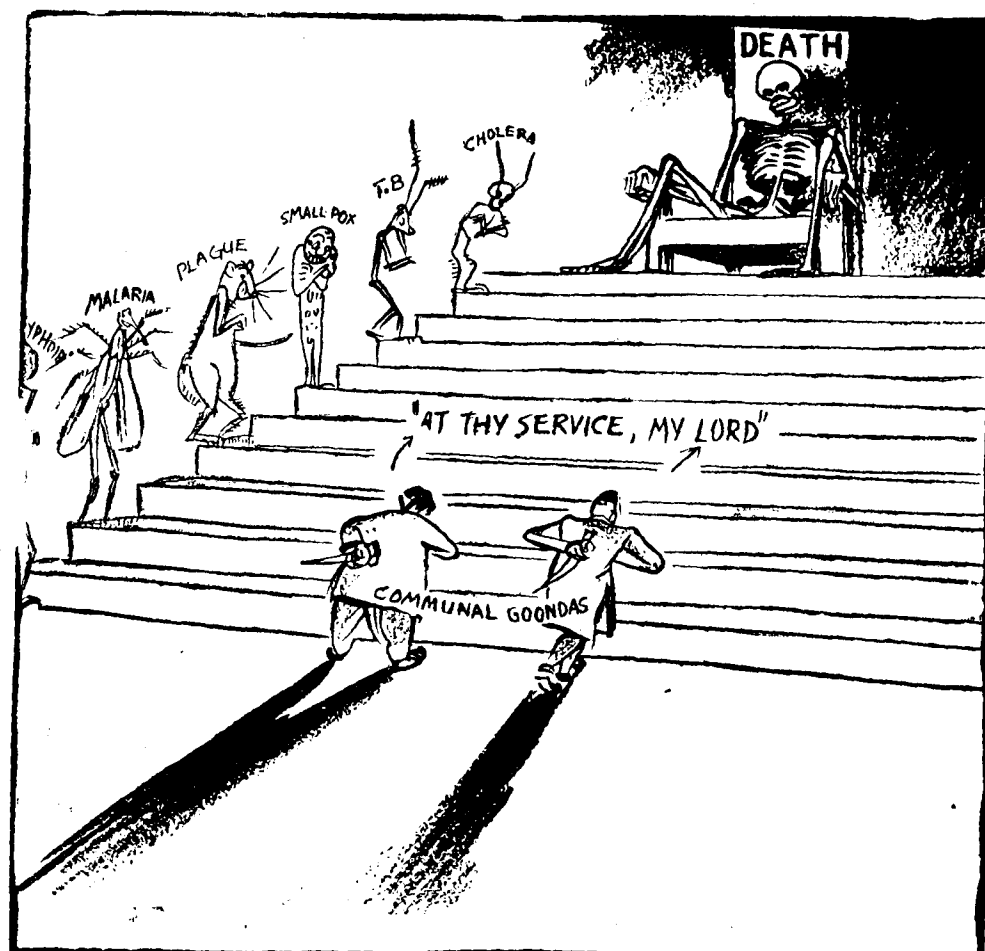
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PEOPLE'S HEALTH

A Pioneer in the Field of Public Health

VOL. I
No. 3

DECEMBER, 1946

ISSUED
MONTHLY

EDITORIAL . . .

Exit I.M.S.

The Conference of Health Ministers have writ "*FINIS*" on the chapter of the most pampered services of the Imperial category. The resolution of the conference runs as under :

"This conference of Health Ministers is of opinion that there should be no civil branch of the Indian Medical Service and requests that the Central Government may arrange to take back immediately the Indian Medical Service personnel in the Civil employ in the Provinces, and post them on the military side to which they rightly belong."

We welcome this resolution which abolishes the disgusting class distinction which has so long marred the solidarity and progress of the Medical Services. We may at once state we deplore the passing of a service which has much to its credit. It did all the pioneering in the introduction of modern medicine in our country ; it helped to spread medical relief ; it set up centres in medical education on modern lines ; it scored several successes in research and in the pursuit of knowledge. But it would be far from correct to imagine that all this was achieved in any altruistic spirit. While the service had

much to its credit, the members of the service had more to their credit in their banks when they shook the dust of this land off their feet. *We admit that fortunately there were and still there are a few in the I. M. S. who serve in this land with lofty ideals. It is because of this that the service still commands a certain amount of esteem and respect.*

The complaint of the people of this country against the I. M. S., is not based on personal or racial considerations. They always found themselves in comfortable billets and the plums fell into their laps with incredible ease. They were ever top-dogs to whom our own countrymen in the Provincial Services no less qualified than they, had ever to kow-tow. They sedulously fostered a reputation for all-round competency. Coming as raw hands with the minimum registrable qualifications and with a smattering of military training, they were quietly and quickly thrust into positions of vantage where they could earn while they learned ; and they were no mean hands at exploitation. Lest any of them fail to rise up to the mark or fear that their 'dignity' may be lowered, they were always favoured with a ridiculously high scale of emoluments—a scale which a Provincial man of equal or even better qualifications,

experience and capacity was persistently denied. Like the other 'heaven-born' services they were completely sheltered from local 'interference' by the White-hall God-father. If a few made their mark in the scientific field, they were given every opportunity for it, while similar facilities were studiously denied to the Provincial men who showed any flair for research. Nominally a military service, the tint of the integument was often enough to help some to escape all war risks in two world wars, while hundreds of the darker hue were coaxed or pressed into military work. Despite all the good, we have had from them, we shed no tear at the disappearance of this over-privileged service. *The coveted posts now held by them can well be filled by our own men.* While we say that the service must go from our midst to the fighting ranks, we are not for expelling the actual personnel from our midst. We welcome all medical talent from every corner of the world to come and stay with us and give us of their best; only let them come as equals and not as "privileged" persons. We hope the Central Government will give effect to the resolution with the immediacy expressed in it and not "consider that this should take place when a suitable opportunity occurs."

The Secretary of State for India may take shelter under the Government of India Act to maintain *Status quo*. The Central Government should use all the legal ingenuity they are capable of to bring pressure to bear on the Secretary of State and to see that the decision of the Health Ministers, is given effect to expeditiously.

We congratulate the Madras Minister of Health on having sponsored the resolution. She was best fitted to do so.

She has had the advantage of hearing and presiding over the debate as Deputy President of the Assembly on the famous I. M. S. resolution moved by Mr. T. T. Krishnamachariar in the Madras Legislative Assembly on 8th August, 1939. It was then recognised by one and all that the mover of the resolution marshalled his facts and figures with dignity and without importing into the debate any passion or prejudice. Dr. T. S. S. Rajan, the then Minister of Health, made it abundantly clear that the Government accepted the resolution in the interest of the country and not on account of any prejudice against any class of persons. We would strongly recommend to those now in authority to peruse the report of the debate which is published in Vol. XIII—No. 5 of the Madras Assembly Debates. They would then realize the high level of the debate which reflects credit to those who took part in it. We feel that it is in that noble and impersonal spirit that the Conference of Health Ministers has come to the same conclusion. It is in that spirit we welcome it.

Bankruptcy All Round!

Madras City has been experiencing incessant downpour of rain for the past few days. Many parts of the City are reported to be under water. The worst affected areas are those where the poor people live in their humble mud cottages. They are as a rule located in areas which are the first to be flooded by a rainfall. Thousands have been already rendered homeless. This is indeed, tragic. Our 'public men' who are out to render 'public service' to the dumb masses in particular, shed crocodile tears over this and similar tragedies! The credulous and gullible masses are moved by such tears! God alone can save them!

This is not the first occasion when the City had experienced such a heavy precipitation of rainfall. Experience counts. In engineering profession in particular, experience should count and should be taken full advantage of by engineers who come forward to render professional services for profit. There is no evidence that the engineering profession here has benefited by past experience. Man-holes of the so-called sewerage system, located both in public streets and in private compounds, belch out offensive sewage with unbearable smell. Many areas are now saturated with sewage. The sludge forms into a slimy mat in those areas as the floods recede. This defect, amongst others, has been already brought to notice through Press articles. No representative of the rate-payers appears to have bestowed any thought or attention to these complaints. Nor have the facts been challenged in public so far. What a fraud on our representative institutions!

It is said that a Corporation has no body to be kicked or a soul to be damned! But the rate-payers have the remedy in their own hands, if and when elections are held. A 'popular Ministry' is obligingly putting off the judgment day. We have no doubt that when that day comes the rate-payers would refuse to be driven like dumb cattle to the polling booths by the 'kanganies' or fall an easy prey to set slogans.

It does not require any high proficiency in health engineering to understand that flooding of areas with sewage is potential of grave mischief. The result is insidious and immeasurable. But our medical health experts here who dabble so much in environmental sanitation are usually silent on the point. They have not developed a

technique connecting the cause and effect of flooding occupied areas with sewage.

In certain parts of the City storm water drainage had been already executed at considerable expense. But no relief is perceptible in them. Still they continue to get flooded. Further storm water drainage works are in progress at a heavy cost; but as the Corporation's caution board notifies, 'Drainage works go dead slow'! That there should be something radically wrong with the basic principles of the design of the drainage system—storm water or sewerage—should be obvious from the results. It is a truism that even the most prosperous city in the world should face a bankruptcy court, should it attempt a sewerage scheme to take in the maximum storm-flow. There is a limit for the carrying capacity of sewers. Details of the design should restrict the flow into the sewerage system. But there is no justification for the failure to provide adequate storm-water drainage system to cope with the maximum precipitation of monsoon rainfall. The drainage areas should not be allowed to serve as flood moderators. *Any government which has an eye to efficiency will constitute an expert committee to examine the principles and details of design before permitting further expenditure on schemes drawn up on principles which have not stood the test of experience.* The Government usually "sanctions" these schemes on the advice of their highest engineering expert adviser. The Government have apparently realised the ineffectiveness of the procedure adopted in the past, if not the wastage of public funds. They have now ordered that the Corporation should work out detailed plans and estimates for a scheme of storm water drainage of certain water-logged areas and "furnish necessary hydraulic particulars in consul-

tation with the Chairman of the City Improvement Trust." (Vide "The Hindu," dated 5th Dec. 1946, page 6, col. 7). The public should have thought that this functionary was appointed as Chairman of the City Improvement Trust on account of his proficiency as an expert in the development of Cities. No one could have imagined, including the appointing authority, that he was also expected to serve as an expert in Drainage Engineering. He may or may not feel competent to shoulder this additional responsibility thrown on him by Government. But our expert engineers under Government employ, have not developed the courage to admit their limitations. When once the Government issue an order in their wisdom, our engineers readily acquire remarkable competency to discharge the task set to them—matters not what their training, experience or aptitude be. And we ask why not? When no personal responsibility is attached to the professional advice which our engineers tender, why should they not claim to be experts in all branches of engineering?

We cannot congratulate Government on the procedure they have now proposed. They have their expert sanitary engineering adviser. Why short-circuit him in this manner? Is it because the Government have learnt by experience that their sanitary engineering specialist and the chief engineering expert have been both found to be unequal to their task? If that is so, why not abolish these posts straightaway and save the tax-payers' money? Or, in the alternative find the right men for the right jobs? But it looks as though our administrations are fast becoming notorious for finding jobs for favourites rather than competent men for jobs?

We would however, caution the Chairman of the City Improvement Trust at the very early stage of his career here, to apply his time, thought and energy on the difficult task ahead of him instead of dissipating them on a job which cannot be considered by any stretch of imagination to fall within his scope of public duty. But if he wishes to pose as an all round engineering expert and dabble in works which demand high specialisation, he is welcome to do so.

Water Supply and Sanitation.

The Provincial Health Ministers' Conference passed the following resolutions on the subject:

"The Conference agrees

(1) that an active programme for the improvement of water supply and sanitation in both urban and rural areas should be undertaken;

(2) that in respect of water supply the objective should be to provide at least 50 per cent. of the population with a safe and abundant water supply within a period of not more than 20 years and the entire population within not more than 35 years;

(3) that in urban areas the objective should be to instal adequate sewerage in all towns with a population of 50,000 or over during the first ten years;

(4) that the constitution and functions of provincial water and drainage boards should be left to the discretion of Provincial Governments."

From the resolutions, it is clear that the objectives are formulated in terms of an optimum target to be reached within a given period. The trouble in regard to consolidated plans

spread over a number of years is, that, while they can be readily drawn on paper, it is in implementing them in practice that difficulties and delays are encountered. What has happened to most of them is that they have miscarried on account of lack of co-ordination or on account of a rigid enforcement of *a priori* requirements.

The resolutions quoted above are admirably phrased generalisations; but the ways and means of giving effect to them are left very much in the air or taken for granted. What the common man who had been suffering so long, wants is an actual beginning which will give him a tangible proof that the basic requirements of a clean and healthy environment will be made available to him within a reasonable time. What are the conditions which will render this possible? First and foremost, we have the problem of finance to which disproportionate importance is generally attached to justify a *non-possumus* attitude seems the acme of sweet reasonableness!

As Pundit Nehru put it, "*If funds could be available for big wars, there is no reason why they should not be provided for the fight against ill-health.*" Nobody asks the question whether we can afford to fight a war; but the moment the war is declared, we bend all our energies and mobilise all our resources towards the one great purpose of getting the better of the enemy. There is no reason why we should not adopt the same policy in fighting such deadly and insidious enemy as unhealthy environment which works untold havoc in the economic potential of the country as a whole. *What is urgently required is the will of the State to fight the war to a finish.* In the past, it might have suited the foreign administrators to throw the burden of providing the primary

necessities of life on our impecunious local bodies and sit tight with folded hands. People's representatives who now run the administration in the name of the people and for their benefit cannot follow the foot-steps of their predecessors in office. They should accept the entire responsibility for improving the living conditions of the people and take immediate and effective steps to discharge it. This leads us to a few considerations which we strongly urge upon our Health Ministers for examination and immediate action.

It is notorious that the resources of our local bodies are inadequate for providing the basic amenities of life. Even elementary necessities such as water supply and drainage, cannot be provided by them without being backed up by a loan or subvention from the State. But the conditions attached to these loans as at present in vogue, hinders rather than helps progress. As a rule, all loans for such improvements should be repaid within a maximum period of twenty years or so. There is no reason why the period should not be extended, bearing in mind two important considerations: (a) The solvency of a local body is not determined by a time limit and (b) the period of repayment of a loan must be made conterminous with the period for which the improvement or amenity can be expected to give maximum benefits expected of it. It is quite possible to make the repayment of the loan spread over a period of 50 to 60 years. The effect of this in its turn, would be to reduce the amount of annual equated payments; thus making it a comparatively light burden for the local body to bear without feeling the pinch of it. This practice is uniformly followed in England. It is high time that

we adopt it in our own country as one of the fundamental principles on which alone progress in environmental sanitation can be hastened. It must be further accepted as a principle that every generation should be made liable for repayment of loans borrowed by its predecessors.

The Insurance Companies are obliged under law to deposit 55 per cent. of their investment in Government Security. These companies are perhaps, more vitally interested in the reduction of death rates than the State itself! Epidemics do not discriminate between the policy holders of Insurance Companies and the rest of the people. It would appear reasonable that the Central Government should in its turn divert the funds so invested with them by the Insurance business, for improving the living conditions of people.

The Insurance business has to its credit large accumulated funds over

and above the sums invested in Government Security. These companies should be only too glad to do their bit of duty to the public at large by utilising their surplus funds in the promotion of colonisation schemes, town extension schemes and housing schemes and the like. The State should consider how best this avenue could be tapped for the promotion of the health of the people. If the Insurance Companies come forward to co-operate with the State they would be winning the appreciation of the public at large. This in its turn, would make insurance quite popular, as it should be. The state should in its turn render every assistance to these concerns encouraging them to come forward to carry out works of this kind. We shall in due course, discuss the other aspects of the problem, such as agency for investigation, design and execution of Public Health Engineering schemes, the training of personnel and the rest.

A CONFESSION OF WEAKNESS.

In declaring open the Hallett Hospital, Cawnpore, on the 16th Dec. 1944, His Excellency the Viceroy (Lord Wavell) stated in the course of his speech:

"Make no mistake though: hospitals, even the best and the largest, are to some extent a confession of weakness. *They mean that we have failed to control public health at its source.* You will have noticed that there is no complacency in the Governor's speech and that he and his Government recognise how much there is to be done in the field of public health, medical education, medical and nursing. Many projects are under preparation to control malaria, to improve sanitation and water supplies, to found maternity clinics and to develop preventive measures of all kinds."

(*The "Hindu", Dec. 17, 1944, p. 5, col. 4.*)

PLEA FOR "ENVIRONMENTAL HYGIENE"

BY

MR. N. V. MODAK, C.I.E., J.P., B.E., M. INST.C.E., M.I.E.,
M.I.M. & C.Y.E., F.R. SAN. I.



I am one of those, who like the Editor of the 'People's Health' believe that the first and the most essential step in the progressive promotion of the people's health in India is the improvement of 'environmental sanitation'. This side of Public Health has been miserably neglected in the past and it is high time it were taken up in earnest by giving it first priority in the reorientation of the Public Health Services in India, which is receiving the attention of the Central as well as of the Provincial Governments. In order to bring medical aid and other amenities necessary for good health within the reach of the poorer classes, 'Planning' on the right lines is most essential. The two basic factors upon which the success of a health plan rests are adequate facilities and appropriate service personnel. A programme adequate in scope and extent to meet the needs of all the people, can only be framed by studying

the needs of the individual, of the the community and of the nation as a whole.

2. 'Environmental Sanitation' was given first place in the activities of the Public Health Services of other countries in its early stages. When insanitary conditions were removed, then only the services were extended to cover other forms of 'personal' services to mothers and children, to the school going population and to the patients suffering from infectious diseases. About 100 years ago, Sir Edward Chadwick 'apostle of efficient water supply and drainage', started in Great Britain the greatest and most successful crusade for the removal of insanitary conditions responsible for the causation of illness. With his pioneer work and that done by other sanitarians in the field of sanitary science, considerable strides were made in that country in regard to 'Environmental Sanitation' especially in regard to water supply and sewerage by the end of the last century. The English Public Health Act of 1875 was mostly environmental in its outlook and it covered all aspects of environmental hygiene. These services are now available to almost the whole of the urban population of Great Britain as a matter-of-course amenities of life, it being forgotten that they were non-existent a hundred years ago. Their health value however is only appreciated when they fail to function and become a menace to public health.

3. "Environmental Sanitation" includes supply of pure water, provision of good drainage arrangements, clean food, maintenance of towns and houses in a clean condition and preservation

of the purity of air we breathe. The services associated with these fundamentals or essentials of life are in modern times considered to fall under 'Public Health Engineering' and not under 'Preventive Medicine' as heretofore. This changed outlook has not escaped the notice of the Bhoré Committee who have recommended that these functions should be placed in the hands of an engineer possessing special training in problems of environmental hygiene to relieve the medical officer of these duties so as to enable him to concentrate more on his preventive and curative medical work.

The Public Health Engineer, in future, will have to play a very important role in the promotion of public health and this factor should therefore not be lost sight of, as pointed out by the Bhoré Committee, in organising the Public Health Services in this country. In U.S.A. the Public Health Engineer is expected to preserve and maintain the purity of air, water, food and the access of sun light—the essential elements necessary for human existence. The courses of his professional training in that country include water purification, sewerage, industrial waste disposal, stream pollution and purification, sanitation of shell-fish ponds, collection and disposal of refuse, sanitation of swimming pools, rural community camps, food supplies, stores and restaurants. Instruction is also given in that country in the relationship of insects and rodents to diseases, the atmosphere to health and comfort, housing and health, school sanitation, medical hygiene, organisation and activities of health departments, the collection, analysis and interpretation of vital statistics, epidemiology, value and conduct of health survey and the use of standard health appraisal forms.

Bhoré Committee have included under "Public Health Engineering"—water supply, general sanitation including conservancy and drainage, river and beach pollution, control of insects and rodents and other vectors of disease, control of trades, dangerous and offensive to the community. They have however excluded 'Town-planning and Housing' which according to them is the job of a professional town-planner. I do not think that 'Housing and Town-planning' can be divorced from other items included by the Committee under 'Public Health Engineering', because bad planning and the existing sub-standard housing conditions are as responsible for poor health as deficient water supply and drainage. Public Health services cannot afford to exclude the improvement of these conditions and the abatement of overcrowding in the dwellings of the poorer classes.

Modern Town-planning is directed towards serving the human beings from the cradle to the grave because it controls, moulds, guides and determines the physical conditions under which human beings have to live. The objective of future planning of towns is not merely confined to make them sanitary, safe and hygienic but it covers a very wide field *viz.*, of meeting fundamental human needs—physical, mental, social and economic. The days of planning in abstract are gone. The fundamental unit in future planning would be the 'neighbourhood' providing domestic life, contact with nature, intellectual and mental sustenance and opportunities for working to all its inhabitants. It will provide a balance beginning with the family life and running through the city and the region. It will fit our present needs and at the same time offer possibilities of growth and expansion.

It should be small enough to enable every inhabitant to take a personal part in its activities but sufficiently large enough to make it self-supporting and capable of providing a full and varied community life.

A Public Health Engineer may also prove very useful in the administration of certain items associated with occupational and industrial hygiene. The Engineer's function in an industrial health programme will include the prevention of occupational diseases, the study of abnormal temperatures and humidity, moisture, noise, overcrowding, fatigue and mental and personal hygiene. The engineer has to determine the control measures based on the findings of the physician. The control methods will include (1) substitution of a non-toxic material for a dangerous one, (2) isolation of the process, wet methods of dust control, exhaust ventilation and use of personal protective devices.

From the reports appearing in the Press of the conference of Provincial Health Ministers called by the Interim Government of India at Delhi in October, 1946, it appears that the reorganisation of the health services both at the Centre and in the Provinces will be undertaken shortly and the structure thereof will be based on the recommendations made by the Bhoré Committee. There is therefore reason to believe that in the new health organisation the Public Health Engineer will be given an opportunity to work in responsive co-operation with his professional colleagues—the Medical Officer of Health—in improving the standard of public health in this country which ranks to-day very low as compared to that obtainable in other countries of the world.

It may also be presumed that the recommendations made by the Com-

mittee regarding Environmental Hygiene, courses for training of Public Health Engineers, Housing and Town-planning would be referred to a committee of experts in Public Health Engineering for opinion as the Bhoré Committee themselves have stated that,

"the subjects under consideration here are of such importance and some of them raise issues of such complexity as would seem to justify special investigation before decisions can be reached in respect of them.... We have put forward certain suggestions in respect of these problems and although we feel that they do not constitute conclusions based on such detailed consideration as their importance would require, we trust they will help to stimulate discussion and to facilitate further action."

A good deal has to be done in the field of 'Environmental Sanitation'. All round research is necessary. Air, most essential element to human life, is allowed to be polluted in industrial towns though it is known that polluted atmosphere is highly injurious to health. Polluted atmosphere is not only unpleasant and depressing but it is also destructive to buildings, fabrics and vegetation. According to the report of the Royal Commission on coal industry, three million tons of soot equivalent in weight to nearly three days' output of all the collieries of Great Britain is annually discharged into the air. The problem of air pollution has still remained to be tackled.

Housing policy has yet to be developed in this country to eradicate the slums in industrial towns to abate overcrowding and to provide new decent homes at low rents. Housing and Slum clearance are the pressing problems all over the world. In most of the principal towns there is acute shortage of housing. The shortage is mostly confined to that stratum of the

society which cannot afford to pay an economic rent. The shortage of houses with the inevitable result of overcrowding is therefore a problem relating to poverty. Housing must form a part of any national health policy. Bhore Committee recommends that Provincial Governments should consider the establishment of a statutory body under the direction and control of the Ministry of Housing and Town and village planning with financial resources and power to plan and execute a province wide house construction and town and village development programme on a 20-30 years plan in five yearly stages. The Committee has also recommended that type plans for houses covering a considerable range of cost, material,

sizes, etc. should be prepared and that the plans and estimates should be sufficiently detailed to be of assistance to the wide variety of people for whom they are intended. The Committee has also stressed the necessity of 'research' and has suggested the establishment of an All-India Housing Research Institute. Necessity is also felt for establishing a Research Institute to tackle the problems of purification and sterilisation of water, and of the methods of sewage disposal. It is hoped that a Central institute will be established by Government for carrying out research and also for co-ordinating the work done in different provinces in these fields.

SANITARY ENGINEERS AS STATESMEN.

Returning delegates and official reports from the first Inter-American Regional Conference of Sanitary Engineering held in Brazil last month (*ENR* July 4, vol. p. 4) reveal substantial progress toward the formation of a permanent hemispheric organization. This movement is of more than passing significance when we consider that it was initiated and executed by a group of professional engineers. So often it is said that the engineer subordinates his social, political and economic responsibilities to technological activity. The meeting sponsored in Brazil, however, sought to unite engineers of many countries in a common effort toward making this world a better place in which to live. One means to this end, of course, is the promotion of sanitation. And in the opinion of qualified health authorities it is the sanitary engineer who is best equipped to combat and control the environmental diseases that are the major deterrent to a nation's development and the economic welfare of its people. Technical accomplishments of the sanitary engineer furnish eloquent testimony to his professional abilities; the recent meeting in Brazil and the plans prepared for another in South America this fall reveal his potentialities for development of closer international relations.

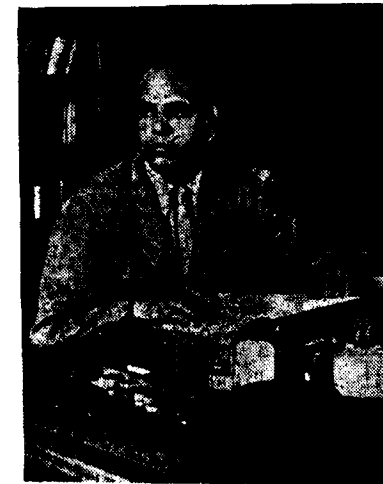
(*Engineering News Record*, dated 25th July, 1946.)

THE WAY TO PEOPLE'S HEALTH

BY

RAO BAHADUR DR. C. RAMAMURTHI, B.A., M.B., B.S., B.S.SC.

When the baby is born the next stage, that is, that of infancy, begins. The period lasts for one year from the day of birth. The infant is capable of being brought under discipline and be educated during this period. When the baby is born, its direct discipline begins. The formation of correct habits is the purpose of discipline at this period. Regularity in regard to feeding, rest, elimination and exercise is the first good habit to which the baby should be broken. It commences with the feeding of the baby. It must be done regularly and punctually at stated intervals. If the mother be of normal health, breast-feeding is the safest and therefore the best method of feeding the infant. All other methods of feeding are only next in point of merit. It is only when the mother's health does not permit, the baby being put to breast for feeding or when the mother's milk is deficient in quality or inadequate in quantity for the baby that recourse will have to be taken to other methods of feeding which may be considered next best.



[This is the third of the series of articles by the author. This series is intended to educate the 'educated' and the 'common man' on the fundamentals of the health of the people.

—Ed., P.H.]

The baby taking its first meal is an important event in its life; and it needs our full appreciation. During the first twenty four hours after birth, pains of hunger due to the contractions of the baby's stomach, cause discomfort and it cries. It is then put to breast. But that pleasant and pleasurable anticipation of food, called appetite, is not yet developed. Appetite is a psychic phenomenon brought into play by the senses of sight, smell, touch and taste. The thought of good things to eat also stimulates the appetite. On the other hand, hunger is a purely physical sensation that serves to call our attention to the fact that the stomach

is empty. Appetite is based on pleasant memories of food; and it is evoked whenever the subject of food enters consciousness. It serves to stimulate the flow of the digestive juices; it controls the quantity consumed. Hunger calls to mind the fact that we need food; while appetite tells us how much to eat; of what kind of food to eat; and it helps to digest it. It is our common experience that even when we are hungry we do not like to eat much when we are under extreme emotional strain or in unpleasant or disgusting surroundings. It is due to the fact that appetite which controls

the quantity of food we eat is reduced by the psychic factors. This applies to the baby and its food also. Psychologically, a baby is considered a being that is capable of functioning reflexly to impressions made on it by the stimuli from its surroundings. The little baby is full of potentialities. It has an inborn nerve reflex by which it is made to suck and attempt to swallow when anything is applied to its lips or their neighbouring parts. It will often turn its head and make sucking movements towards any soft warm object that touches its cheeks. When it is put to the breast very soon, with the first few swallowings of mother's milk, it experiences the comfort of warmth and relief from hunger pain. Therefore, naturally, it begins to develop a pleasant memory of food associated with the taste and smell of milk and the cuddling of the mother; and in each succeeding feed it finds warmth and relief from hunger pain. It is in this process that we can recognise the beginnings of the appearance of appetite in the baby. As much of its health depends on the baby's appetite, it is our duty to facilitate its development and help its growth. The baby goes on feeding till it reaches the point of satiation; and it gives us indication that its stomach can hold no more. We do not know how, that is, by what device this satiation is brought about. But it is necessary that we take a note of it and respect its significance and warning, if we expect to retain the natural sequence of hunger, appetite and satiation, by which we are guided about the normal quantity of food to be given to the baby. The baby must not be forced to take its feed. It will be useful also to educate the baby, in the first few days after birth, to get used to the rubber nipple of the feeding bottle. Of course, this presumes

that the necessary bacterial cleanliness of the bottle and the nipple will be maintained. If the baby is taught to get used to the bottle also, weaning difficulties later may be overcome; and the introduction of fruit juice and cod-or shark-liver oil in the baby's feeds will also be made easy. By the time, the baby arrives at the fourth month, it may be taught to feed from a spoon also. Bland cereal food may be commenced in very small quantities at this stage and the appetite of the baby for the food may be developed. For the infant to take any appreciable amount of the food it may take a fortnight or more. It is worth spending the time and taking the trouble to teach the child to take cereal foods. To begin with, a bland cereal food like a thin gruel of rice or barley starch may be added to the feeds. The gruel may be mixed with a suitable quantity of milk and sugar to improve its taste and nutritive value. At all times, the regularity and punctuality of the hours of feed must be strictly observed. This cannot be stressed too hard.

In this connection, I have to make the following remark: The use of the conch-shell *Paladai* in this country in the place of the spoon with which to feed the babies, is to be deprecated, as it is not possible to keep its interior bacteriologically clean. Silver and bell-metal *Paladais* are also used. But they are often thin and sharp-pointed or sharp-edged; and so they may injure the baby's mouth.

From the stage of infancy, we pass on to the next stage: that of childhood, *i.e.*, the period between the end of the first year and the end of the fifth year of life. The toddlers and the pre-school child come within this period.

We now come to the second of the twin forces operating on and influenc-

ing child education and training. This is environment. This term covers many influences. Some of these act before birth and are pre-natal; but the majority act after birth, *i.e.*, they are post-natal and some act in later years of life. These influences affect both body and mind; and they shape its characters. In many respects, the environment is the dominating factor of human development, especially from childhood to adult age. As the body and mind are plastic in childhood, it is the most suitable time for education and training. Men are not grown up children as it used to be said. They are so different. They develop and undergo transformation. Their physical characters are visibly altered. And to some extent, the water constituents of their tissues also differ. The infant's head is proportionately to the body, larger than that of the adult. The water constituent of the foetus is about 90 per cent.; that of the child is 74 per cent. and that of the adult man is 58 per cent. Thus, age withers and dries up, as it were, the human being. The child at five has a head which has nearly reached its maximum growth in size. But its legs are proportionately short; and its arms lack the proportions that exist in the adult. In the case of the internal organs, similar differences exist. The weight of the human brain at birth is about one seventh of that of the entire body; while in adult life, it is about one fortieth of the whole body weight. In the brain of the child, the grey and the white matter are not so very clearly distinguishable and the convolutions are not so well marked, as in the adult. Unlike the lower mammals, the human body is absolutely helpless. But its nervous system has splendid possibilities. It offers a remarkable field for the operation of

the influence of environment. Again, there is another difference. It is in the constituents of the blood. The white blood corpuscles, are, relatively to the red blood corpuscles, larger in numbers in the child. With a change in these proportions strength and vitality are gained. Again, the muscular tissue in the child has weak and undeveloped tendons. The heart is comparatively large; and so also are the other internal organs in general.

So different is the child from the man that the right food, proper exercise and the correct training given throughout this plastic and impressionable period is productive of wonderful results, beneficial to him in growing to be an adult person and a useful citizen of the State.

With the gradual shifting of emphasis from remedial and curative measures to preventive and constructive work, problems of infant and child-welfare have received much attention. This is largely due to the fact that work with infants and children is fundamentally constructive in nature. Therefore this task consists today mainly of adjusting the constructive philanthropy of the community to the needs of the child, its improvement being the direct objective.

Every social problem involves the interests of children, who grow to be the future citizens. And the growing class of men and women who are endeavouring to acquaint themselves with the different aspects of practical sociology will find, in these articles, some food for thought.

In modern social work the emphasis has been shifted from the parent to the child. It is because of the belief in the principle "an ounce of prevention is worth a pound of cure". Prevention, more important than relief

or cure, is the slogan of modern social work. Fundamental social reforms are demanded today. As the child presages the coming man, it is well to begin with the child. It is the plastic material that can be moulded into shape, well or ill. In possibilities, the child is gigantic; but without opportunities, it is dwarfed. The more the time and energy that are spent on the child, the more lasting and profitable is the investment. To educate and train the child is worth infinitely more than to labour with the deficiencies of the adult man with his habits and morals formed and set. The welfare of the child involves adequate physical, mental and moral development. In childhood and adolescence lies the time for the preparation for the adult life. Little can be accomplished in later life, in this direction.

The new-born human baby is, as already stated, utterly helpless. Such helplessness is associated with the prolongation of the period of childhood that furnishes untold possibilities of development. A long period of childhood makes room for the play of influence of environmental forces on the individual. And this influence is stronger in proportion to the initial helplessness of the child. The impressionable child easily yields to the influence of contact with the other members of the family and later, of the community. In early life, certain characteristics and psychical traits become fixed relatively, owing to constant association with special mental types. That part of the child's psychical nature which is clearly and absolutely individual and his own is relatively small. The greater portion of his characteristic mental endowment is gained from the interaction of his own mental nucleus with the minds of his parents and other members of the

family and community. It is well known how ardently adults cling to the beliefs and traditions acquired during childhood. Social heredity within the family—i.e., the transmission of ancestral ideas, traditions, prejudices and knowledge is a powerful factor in the life of every normal individual. The saying "Like father like son" has largely resulted from this kind of communication and its influence. The general tendency of children to follow the religious and political beliefs of their parents illustrates the power of social heredity which is only a form of environment. The fixation of mental and moral traits in the human being should be a paramount consideration in the training and development of the child during the entire adolescent period. Therefore the right training and education from the earliest self-conscious moments of life is, therefore, a matter of great sociological importance.

The most important among the conditions of environment are the home surroundings of the child. These, the home surroundings, continue unchanged for a longer period of time than do conditions outside the home. Therefore home life and training to begin with, are of vital importance, in the development of the child. But a child particularly the boy, in this country, soon gets subject to the influences outside home also, unless prevented as he has greater freedom, than the girl of moving outside the home. These influences tend to mould the character and also affect the physical well-being. These outside influences are: the associates, the manner of their and the child's life, the sanitary conditions of the street or lane and schools and place of work.

This account of the home will not be complete without mention of the poor man and his "home." In fact, the

very poor man has no such thing as a "home." In cold countries, the blazing hearth, particularly, in the winter, is one of the cheerful aspects of the "home." But the poor man has a starved grate and the firing is scanty. There is not enough glow in the hearth to keep the natural warmth in the fingers of the mother and her several shivering emaciated children the family has the misfortune to have. Instead, the poor man hears, in what stands for his "home," only the clamours of his wife made gaunt by famishing hunger. The absorbing consideration of securing food for the family crushes out of existence all interests and topics that should expand the mind of man and woman alike and connect them to a sympathy with their general existence. Beyond the price of rice and cloth, news have no interest to him. His so-called "home" has no larder. There are hardly any cold viands in it to munch; nor could he relish any curry and rice with an onion. He may probably get these if he goes out to a hotel or restaurant; but he will have to desert his wife and children; for, he cannot afford it to them all.

Now let us turn to look at the picture of the wife and the children. What wife? and what children? Prosperous persons object to the desertion; for they imagine that the family is clean and contented with enough to eat and wear like their own. They think that the poor man has a wife whose face, as once in her youth, would be beaming with a smile upon him; but now, instead, her face is ground down by want and care and overrun by misery; and so it is devoid of any cheerfulness. That is not the face that will invite the ordinary husband "home" to stay with; for it can smile no longer. Cheerfulness has long been effaced from that countenance. Such a wife cannot

share any comforts, such as they may be, with the husband. Nor can she lighten any of his burdens. It is a fine thing to talk of the "humble meals shared to-gether." But what is to be done if there be no bread nor even thin gruel in the pot?

Again, it is said that, in the "home," the innocent prattle of the children takes the sting out of a man's poverty. But unfortunately, the children of the poor do not know to prattle. No; there is no childishness in their dwellings. It is true that poor people do not "bring up" their children but they "drag them up"! No one has time to fondle it; no one thinks it worth while to coax it, to soothe it, to toss it about and up and down, and to humour it. It is tragic to note that there is none to kiss away their tears. If it cries, it is only beaten. It is pleasant to hear the saying that a "babe is fed with milk and praise." But the babes of the poor get neither milk nor praise. The nourishment that the babe gets is often thin and unnourishing; and its efforts to engage the attention, by its baby-tricks, meet with bitter and ceaseless chiding. The poor child never had a toy. It has grown up without the lullaby of the fond-mother or nurse (in the case of the so-called better classes). It is a stranger to patient fondling and the hushing caresses of those near and dear, that divest it from its unhappiness of the moment. It was never sung to; nor was ever any tale of the nursery told to it. In fact, it was literally "dragged up" to live or die as it chanced. A child exists for the very poor not as an object of dalliance but it is only another mouth to be fed; and, in time, to grow up with a pair of hands to be inured to toil and labour so that they may help to keep the common pot-boiling at home. It is a rival till it becomes a co-operator,

for securing food, with the parent. The child, in such circumstances, is not the joy or solace for the parent. The children of the poor have no days of childhood for happy memory. In short, the "home" of the majority of the very poor is no "home" at all.

In this connection, I have to mention also another type of home which is no "home"; particularly from the point of view of the child. This home has a good larder that the "home" of the poor has not; it has all the fireside conveniences that the poor cannot dream of. But the owners (man and wife) of the house are "society birds." Their house is infested with many visitors and in turn their time is taken up with returning the visits. They have no time to attend to their child who is relegated to the care of a hireling servant to whose tender mercy and kindness the child is left. By this, it is not meant that we should deny our warm welcome to the many noble-hearted friends that, at times, exchange their dwelling for our poor roof. It will be churlish to make such an implication. They are genuine guests; and it is our duty to give them our most hearty hospitality. What is complained of here is the ceaseless attention to the endless chain of purposeless visitors, the droppers-in as they are called, who are cared for to the detriment of the personal attention and care that is their own children's due. The houses of such persons are no "homes," from the children's point of view; but they are desolate places where children have no chance to exist, grow and develop.

It is very difficult to get the very poor to give the necessary attention to their children; and it is impossible for those described as "society birds" to care for their young as they should. For, the former lack the knowledge and

means and in the case of the latter, other considerations press hard on their attention and keep considerations of children's health and training out of it. Those that have a "home" and children in it will benefit themselves and the community much by paying attention to the few simple principles mentioned below.

To some extent the child problems are more easily and effectively dealt with, if it is realised that a bad environment, instead of heredity, is more often responsible for any serious defect in the children. At the suggestion of sociologists much good has been accomplished in this respect. But in respect of sociological matters, however, there is a note of warning to be sounded; sensational over-statement and complacent depreciation of facts must be avoided. Scientific analysis of the real conditions must take their place to provide correct information. Facts of sociology, not properly interpreted, will lead us nowhere. As an example, the following instance may be quoted from an old American bulletin of the Bureau of Education of the United States of America. It published an address in which it was stated that five million (*i.e.*, one-fourth of the American school children) were suffering from malnutrition. If this statement be true, then the American child problems should have been grave indeed. But in this address malnutrition was not defined. And without giving any indication of the actual gravity of the conditions of malnutrition, it is not possible to estimate the degree of injury done to the children. We are accustomed to think of malnutrition as such a serious state of under-feeding, or flagrant misfeeding of children as to cause injurious physical consequences. In a sense, every person may be said to be suffering from malnutrition as, probably, no one takes, at

each meal, exactly the right quantity and quality of food required for the highest state of physical fitness. It will be squeamish to refer to this state as malnutrition. There are many other similar conditions which cannot be compared one with another on such statement of facts. The collection and correct interpretation of the facts are necessary if they should have any sociological value. Otherwise, it will be impossible to correlate properly the work of preventive agencies and introduce preventive legislation.

With few exceptions, the awareness of the value of mental hygiene has been lacking among the greater part of our people and even among social minded individuals. One of the positive benefits of the present world catastrophe is that it has brought to our attention the magnitude of the problem of mental ill-health. As a result of the cases discovered through selective service we are forced to the conclusion that "institutionalized insanity," which costs us perhaps \$770,000,000 annually, is only a small part of the mental illness problem, and probably the least expensive.

It is estimated that approximately 25,000,000 of our young men have been called by the draft boards. Of these about 10,000,000 have been rejected as physically unfit for combat duty, and of this number, 3,000,000 were rejected because they were not mentally fit. Contrast this number with the less than 1,000,000 in our welfare institutions and you can gain some idea of the size of the problem. Remember too, that these young men constitute only one segment of our population of 130,000,000. When we apply the above ratio to those who are older and younger in both sexes, it staggers the imagination.

Our job is to reduce the amount of mental illness by a program of prevention. This program should be so planned that it will begin with the unborn child. Do not take this statement to mean that your speaker is one of that group who believes that if a pregnant mother concentrates on playing the piano during gestation that she will give birth to a musical genius or if she mourns over the death of a pet rabbit that her new-born will arrive with a harelip. But every child is entitled to be born into an environment which is congenial to its mental, moral, and social development. This means, therefore, that a program of mental hygiene in its application should begin with the parents and continue with the child through adolescence and until he has made his permanent social adjustments. This does not mean that the program should be limited to the period just mentioned, but you will doubtless agree that more can be accomplished in the way of prevention within these age limits than at any other period in the life of the individual because of the potent influence of the parents and early environment on mental development.

From these general observations let us consider the implementation of a mental hygiene program. The implemented program is a triad. First, prevention; second, clinical services—including (a) child guidance, (b) dealing with pre-psychotic adults, (c) consultative service; and, three, education and community organization.

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HOME ENVIRONMENT

BY

"HOUSEWIFE".

The first of this series appeared in the October number of "People's Health." I was then not quite certain whether the readers would be inclined to read more about it. Hence, I was awaiting the reaction of the readers. The Editor also promised to watch it before permitting me to continue the series.

I am now agreeably amazed at the quality and the quantity of correspondence on the subject. From a high-ranking hygienist down to a vindictive and vulgar writer who has rightly preferred to keep his or her identity a secret even to the Editor, has been pleased to offer remarks on the last article. I am also agreeably pleased that householders are as much if not more, interested in the subject as housewives. This is a welcome sign of the times. The pervading spirit of the correspondence is that not only people are inclined to read more about home environment but are also eager to know more and more about it.

Some writers have given valuable suggestions on the points I should deal with in this series of articles. I take this opportunity to convey to one and all of them my grateful thanks.

First, I desire to deal with some of the remarks which merit immediate attention. The high-ranking hygienist referred to above, has suggested that the skirting which I suggested should be rounded off at the top so as to avoid accumulation of dust. Yes, every part of the house should be so constructed as to avoid accumulation of dust, dirt and vermin in inaccessible places.

Out of Sight, Out of Mind !

The advantage of the skirting I propose is that it is readily accessible for cleaning every day and as many times as the floor is swept or washed. Some such projection as shown in the sketch (*vide* page 42, No. 1, Vol. I) acts as a bar against the whitewash or the colourwash being carried down to the base of the wall. If it is so taken, constant washing would wash out portions of it leaving awkward looking patches. Compare the skirting which I propose with the sills of ventilators in our houses. They are as a rule, inaccessible for cleaning. The dust goes on accumulating on them to be only carried into the room by the breeze. In some cases,

thoughtful builders have sloped them. It is no doubt an improvement. But there is room for further improvement in this. I shall leave it to the ingenuity of our engineers and builders. A casual observation of our ordinary homes shows how the windows are usually kept closed and how the sills are literally littered with all and sundry—old newspapers, magazines and books are all kept there for weeks and months! No one is interested in removing them or at least dusting the place. Why not slope the window sills also to avoid the accumulation of heaps of rubbish? I consider things out of place as rubbish. Incidentally, it will help to throw better light on the floor.

Training of Cooks.

The same high authority on hygiene has suggested that there should be training centres for cooks. When the semi-starved clerks in Government offices have to satisfy a certain minimum educational qualification before being appointed to service, why not impose a minimum training for the cooks? The clerks can do no harm to any one. They cannot injure anybody's health except their own by overwork and semi-starvation. The cooks on the other hand, can annihilate families by mishandling food over and above feeding themselves to the full. The profession of cooking is an important one. Only trained persons should be permitted to practise it. The trouble in our country is that private enterprise does not readily come forward to render service in this direction. Even if it does, failure is writ large on its face; for, in our country nothing can flourish—excepting perhaps profiteering and exploitation with or without the assistance of the State—Opening a training centre for cooks is legitimately a business of the State. Canteens are now being opened. The other day one was opened in the City of Madras. The object of such canteens is apparently to serve cheap but nutritious food prepared under hygienic conditions to the labourers and others. The canteens are expected to be run under expert direction and under strictly hygienic conditions. These canteens can very well serve as training centres also for cooks. But the selection of the master cooks to train the raw recruits in the art of cooking, is an important point. Otherwise, the scheme is bound to prove a

failure. The Government of Madras have published a beautifully got-up pamphlet giving recipes for the preparation of South Indian dishes. I have had the misfortune to try some of them and a few others also tried their hands at the art. Thereafter, we all exchanged notes. We came to the conclusion that either we should all be incompetent as cooks or the recipes should have been prepared by one who is quite innocent of the peculiar flavour and taste of South Indian dishes. I suppose the pamphlet is meant to guide housewives who do not lay claim to be professional cooks. After attempting to prepare dishes in strict accordance with a few of these recipes, our first impulse after the experience was to invite our Minister of Health for a treat and give her the benefit of tasting the dishes so prepared. We, housewives, are deeply interested in her maintaining palate. We did not like to put in execution our plan. We want her to eat well the food she is normally accustomed to and maintain her strength to cope with her work as a Minister. I do not know whether she will appreciate our consideration for her. This is by the way. The point I wish to urge is that the success of a scheme of this kind largely depends upon the proper selection of personnel.

Registry for Cooks.

Public Health experts tell us that foods are vehicles for the transmission of diseases. Food handlers should therefore be considered in relation to the construction of the establishments in which they work, the equipment used, and the nature of food handled and so on. Because of the physical factors which surround the preparation of food, its storage, protection against



Who knows she may be a carrier of typhoid !

dust, protection against contamination by insects, etc., food handling plays considerable part in disease transmission. Food handlers should pass a test as to their educational

background, their general physical condition, their past history as well as the results of physical and laboratory examinations. All



Training food handlers means education.

these play an important part in determining the likelihood of a food handler transmitting any disease. In our country although licensing of eating houses and restaurants is in force, there is nothing to compel the authorities to satisfy themselves about food handlers. How many of the cooks are carriers of typhoid? Instances are not wanting where cases of typhoid occurred soon after a cook had been entertained in families or in institutions, particularly in hostels. Usually in our country the health authorities do not investigate the causes of the occurrence of such diseases without any apparent defect in the environment. The case reported in page 109 of "People's Health", No. 2, Vol. I, shows how a grandmother aged 97 moved into the home of her daughter and within a month thereafter a member of the household contracted typhoid. Unlike in our country, in America a close investigation is usually conducted on the occurrence of a disease of this kind. The investigation proved that the 97-year old grandmother was really the "carrier". No doubt there are among us old women who pooh-pooh the idea of modern hygiene. They pride in the fact that they are themselves living to a ripe old age without any conception of modern hygiene or bacteriology! Who knows they may be carriers of typhoid without apparently showing any signs of it and doing their bit of service to the families of relations! Such old women live to see the younger generations vanish one by one before their very eyes. I may here mention such was the attitude of the vindictive and vulgar anonymous writer whom I referred to earlier in this article.

Coming to the point, training food handlers means education. The course of instruction should include:

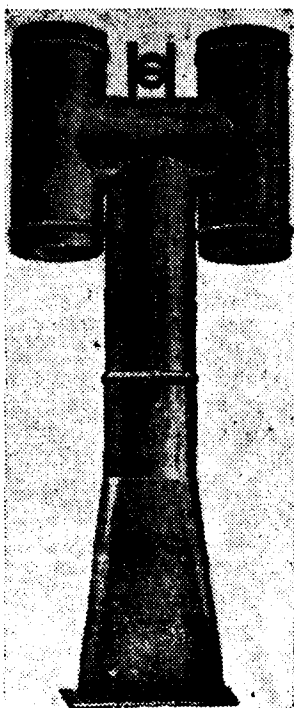
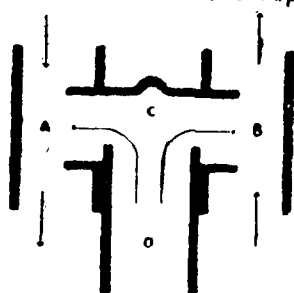
- (1) How disease may be spread through food,
- (2) Personal cleanliness of the food handler,
- (3) Protection of food,
- (4) Dish washing and utensil cleaning.

Such trained cooks should be entered in a register. Their scales of pay may also be fixed. Their terms and conditions of service may also be determined. This would give satisfaction both to the employer and the employee. A registry is therefore essential to bring about the scheme which the learned hygienist has suggested.

Smokeless Ovens.

A correspondent had sent a sheet from a catalogue showing the top of a smoke-free chimney. The design is expected to avoid down drafts. I give a sketch of it herunder :—

Construction of the Top



(With acknowledgment to Messrs. O. H., Ltd.,
Hatton Wall, London, E. C. 1.)

It looks ingenious. It appears to lend itself for adoption or adaptation. This is however, point for our engineer friends to consider.



The maid rubs it for all she is worth!

Another reader has sent a catalogue giving good illustrations of a variety of kitchen ranges. They are good in their own way but they are suitable only to those who can afford to purchase them at the advertised cost. Most housewives cannot afford that luxury. What I suggested was a suitable design to suit every purse and every home. The Editor assures me that before long an article on the subject will appear from the pen of an expert. Let us wait and see.

Kitchen Utensils.

Recently, during the question hour in the Madras Legislative Assembly, a member raised a question on the suitability or otherwise of cooking food in jails in iron vessels. Some members objected to it from personal experience in jail life. Many may not have that unique advantage of personal experience. The Minister in charge is reported to have stated that the alternative of using aluminium vessels was being considered. It is presumed that the State has at its disposal competent experts. It is not clear whether the Minister, while giving his replies to the questions, had taken expert advice in the matter. From what I understand, aluminium is one of the worst to be used as cooking utensils. I understand that it is acted upon by tamarind, salt, and the like. I understand that even curds cannot be kept long in aluminium vessels without dissolving the metal itself. What diseases are brought about slowly and surely are not however, known to me. This is a point which our experts ought to investigate and give the benefit of their findings to the public at large. I wonder whether this article will catch the eyes of the responsible authorities. If by accident it does, will they be pleased to give an authoritative statement on the subject for the benefit of the public? I hope vested interests in aluminium trade will not deflect the normal course of scientific procedure.

Mostly, metal vessels are replacing our old earthen pots. We do not know how far it is desirable. The Government should institute an enquiry into the use of metal vessels for cooking purposes in our homes. I read some-



Our guests simply arrive with their bags and baggage!

where that rustless steel won the first prize as the most hygienic metal for making cooking utensils with. It is expensive in this country now. Our steel industries should exert themselves to manufacture rustless steel cheaply.

Let me not stray in a field in which I know nothing. One thing I wish to emphasise, i.e., the method which we adopt in cleaning our cooking utensils. The housemaid rubs the vessels with ashes, sand or earth keeping in her palm a ball of cocoanut fibre. One can see that iron chatties being polished by the side of gutters in the roadside. The maid rubs it for all she is worth, lest the housewife should get wild, should there be soot on the black metal! The earth should contain in it something shocking. Ordinarily, washing them in water cannot have the effect of sterilising them. The practice deserves to be condemned strongly. In the olden days a particular kind of earth was being sold in the streets for washing purposes. In Burma it is called "sapia". The housewife cannot be over-careful in this and other details of running the household. These small details have a great influence in the dissemination of diseases.

Location of Dining Halls.

Ordinarily the "dining hall" is so located that one has to cross and re-cross it, for one purpose or another. In fact, the so-called dining halls form the passages. Our people sit on the floor and eat their food. They cannot have the luxury of dining at tables. However much one may sweep the floor, a feeling

that one eats on the dust cannot be overcome. The location of the place where food is taken should be carefully constructed. The design should be such as to admit of the prepared food moving in some sequence from the preparation to a place where it is kept pending service; thence to the place where the food is actually served. Our designers should devote a little more thought in fixing up the juxtaposition of the various parts of this portion of the building.

Bed Bugs and Lice.

We, Indians, are well known as a nation for our hospitality. Even the poorest who struggle for a single hearty meal a day, welcome guests to share their poor fare. Our guests simply arrive with their bags and baggage with or without previous intimation! We welcome them. There are of course, miserable misers who draw a long face at the sight of guests! Fortunately they are but few. What the housewife is concerned is not so much about feeding them. We do not present a bill to the guests when they leave us. Indeed, we cannot accept anything in return for our hospitality; but the guests, some of them at least, leave a legacy behind whether you like it or not. One of the benefits of railway travelling is the spread of the pest of bed bugs. The guests quite unaware of the infestation of bed bugs in their bags and baggage, throw them indiscriminately in the house they enter. Bed bugs are difficult to destroy. They hide themselves in inaccessible places. Some experts



... Jump out of it!

say that there is no convincing evidence that bed bugs are ordinarily carriers of diseases. Some other experts say that it is possible that they may be involved in the transmission of

plague, and other diseases. Whatever that be, bed bugs are one of the worst and unpleasant pests in dwellings. They do not give rest to the people. One has to roll in the bed all the night or jump out of it! The housewife is hard put to eradicate the pest. Recipes are given to destroy the pest but they do not lend themselves for application by an ordinary housewife.

Lice are also blood sucking insects. They are said to transmit relapsing fever and typhus fever. In our country however, typhus is rather rare. Relapsing fever however occurs rather widely. The lice are associated with poverty, dirt and overcrowding. Raising the standard of living is said to help the eradication of the insect. The provision of new tenements is expected to improve the standard of living. The slum dweller when he moves into the new

tenements carries with him his bags, baggages and bedding and what not. He simply carries both bed bugs and lice along with him. As a rule in our country, we do not take the precaution against the infestation of these insects in new tenements. I have read somewhere that in England and elsewhere they take special precautions to see that the new tenements are not infested with these pests. I have also read that social workers are employed to be in charge of the new tenements so as to educate the slum dwellers on hygienic conditions of life. Here we do not seem to believe in the real reformation of our people.

The Editor has imposed a space limit. Let me stop here and continue in the next article the other legacies which our guests leave behind. They are rather important to housewives.

Outbreaks of Disease in the United States During 1943, Transmitted by Water, Milk and Milk Products, and Other Foods. *Pub. Health Rpts.*, 60, 491-92 (May 4, 1945).—"Review of the data reveals that disregard of fundamental sanitary principles caused a considerable amount of preventible illness and mortality in this country in 1943." Report deals with outbreaks and does not include all cases of the diseases transmitted by water and food products. The 389 outbreaks reported in 1943 caused approximately 24,000 cases and 56 deaths. "Botulism resulted in the highest fatality rate, with 10 cases and 7 deaths, in all of which the source was reported to be home-canned foods. Gastroenteritis and typhoid fever were the principal water-borne diseases. The most usual causes of water-borne epidemics were lack of, or improper chlorination and inadequate protection of water supplies from surface drainage and seepage from sewage.

"Among the most important sources of contamination which caused milk and milk product outbreaks were lack of or improper pasteurization, improper cleansing of utensils, bulk-milk contamination, and carriers. Food poisoning and gastroenteritis were involved in 60 percent of the milk-borne outbreaks. Foods other than milk and milk products were responsible for 73 per cent of the outbreaks, 59 per cent of the cases, and 59 per cent of the deaths." Reported causes or means of contamination were home-canned foods; lack of or improper refrigeration; infected food handlers; careless or improper handling in preparation of salads; insufficient cooking; possible infection by rodents and flies. "Food poisoning and gastroenteritis were involved in 89 percent of the food-borne outbreaks."—J. D. Lesslie. (*P. H. Engg. Absts.*, Vol. XXVI, No. 1).

HEALTH EDUCATION.

BY

PROF. NILAM RANGANATHAM.

The Hindus, as also the ancient Hebrews, laid great emphasis on hygiene or preventive medicine; and the inhibitions, which have the sanctions of religion in their social customs and daily practices, are, whatever may be the crude encrustations of superstition which long practice and unthinking or irrational acceptance of them have engendered in their mind, the evidence of the regard this great people had for health. Health is ordinarily understood as soundness of body. But it is not only that. It is even much more than soundness of body and mind! Health is life itself! And even as disease—and old age is the one inevitable and inescapable disease—leads to death, health is the *sine qua non* for the harmonious and pleasant enjoyment of life in body, mind and spirit. And it is not incorrect to say that to the extent health is denied to man, he suffers from disease—felt or unfelt, manifest or hidden, known or unknown!

We have to recognise that the maximum potentiality of life either in use or enjoyment is based on the possession of health—a condition which is really something more than being free from ailment. And the achievement of such a desirable condition lies not only in the improvement of the body but in the disciplining of the emotions and the development of mental faculties; and this being so, preventive medicine by itself is incapable of effecting an improvement or the maintenance of health. Here should step in the Ministry of Education to co-operate and work with the Ministry of Public Health to effect a proper and sane and rational moral outlook among the people. While all people praise health and long for it, very few actually strive after it. They do not realise that health is not only desirable but that with a little effort it can be improved and sustained. As a matter of fact health continues with use; neglect of it spells of its deterioration. This is a scarcely perceptible but none the less sure quality and essence of health. And the value of moral discipline in the preservation of health cannot be too highly assessed.

The population in South India—a rice-eating people mostly—are, if an average is struck, under-fed, weak, undersized, below normal weight, and largely non-resistant to disease.

The low economic condition of the people is one reason for this deplorable state of affairs. The high percentage in the incidence of malaria and the unmistakable growth in the spread of tuberculosis are evidence of this. The steady weakening of the *mores* which "religion" held sway in the minds of the people as "education" spread, the stupid and pernicious aping of the forms and externals of European ways of life among the so-called intelligentia, the growth of cities and towns—without plan and in the manner of social excrescences and economic up-surges—the movement from villages to urban areas, are gain contributory causes for the low physical and unhealthy condition of the Madras.

Whatever might have been the desiderata and the causes of the incapacity of former Governments for the popularisation of health-knowledge among the people, the present Congress Ministry, insisting, as it does, on its popularity and representative character and claiming first-hand knowledge of the conditions in which the people live, has a great and immediate responsibility to tackle the problem in an earnest, courageous, radical spirit. For one thing, the freedom from want has to be strenuously striven for—want of nutritious and cheap food, decent and sanitary dwellings, wholesome drinking water and unfailing and near-by water-supply! And a programme of work and methods of an effective and fruitful enlightenment among the population in the matter and manner of a hygienic life, have to be carefully thought out. In the past the pioneer work of Cols. King and Russel has been sincere and zealous and the efforts of Dr. T. S. S. Rajan, as Minister of Public Health are outstanding and merit proper recognition and implicit and loyal operation in practice and fulfilment. The message of health has to be preached among the people; it has to be taken into the by-lanes and high-ways of India. Vigorous and sustained work has to be undertaken with missionary zeal to make our people strive after health. The inclusion of hygiene in the curriculum of studies and the infusion of a very much larger percentage of Natural Science graduates in school staffs may be considered; and the paraphernalia of modern propaganda—the Press, the Platform, the Poster, the Pamphlet, the Cinema, the Radio—

have to be impressed into service in their maximum availability. And ways have to be considered and means devised to alter and improve the work and organisation of Health Week Committees, and, immediate steps taken and far-reaching changes made in the Public Health Department so that the work of the sanitarian—from the Director to the Maistry—is changed in spirit and method and improves in quality and yields results commensurate with its costly maintenance at the tax-payers'

cost, in actual improvement of life and health, instead of adding dry-as-dust details by way of tons of statistics and reports to the already heavy lumber on the shelves of record-rooms! And more than all, non-officials who man the local self-governing bodies should show a greater realisation of their sense of duty to the public and give real and unmistakable proof of their unselfish devotion to the welfare of their constituents by services rendered honestly, efficiently and unflaggingly.

HEALTH EDUCATION IN BRITAIN.

Ever since the inauguration of the school medical service, the Ministry have emphasized the importance of the teaching of hygiene in all types of schools. The teaching of hygiene is a compulsory subject for all students in training colleges for teachers. It is held, however, that this aspect of the health services of the local education authority is educational rather than medical, and the instructions should, as a rule, be given by the school teachers through close co-operation with the school medical officers. In order to give the subject of hygiene a fairly well-defined context and to bring it within the compass of school teaching, the Ministry have issued a *Handbook of Suggestions on Health Education*. This handbook points out that hygiene could be taught by three methods: (a) by habit training; (b) by learning the truths of biology, chemistry and physics; and (c) by understanding the principles and practice of good living itself and gives detailed suggestions for the application of these methods to children of various ages. . . .

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SOY BEAN: ITS POTENTIALITIES.

BY

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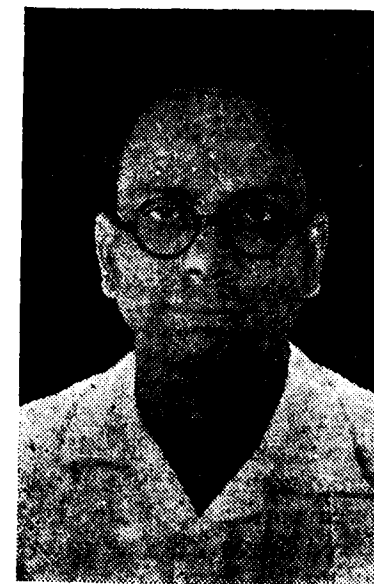
The metamorphosis of the Soy bean from one of the oldest among the food crops of the Mongol races to the youngest and most versatile of the industrial crops of the modern world has been one of the outstanding events of this century. This has evoked a good deal of discussion; some have been frankly lyrical over the virtues of Soy bean and others equally sceptical. To some the cultivation of the Soy bean in any country goes a long way "to provide food for its people, its cattle and its guns." But even taking a more balanced view of its potentialities there is definitely a case for the immediate spread of cultivation of Soy bean in select localities in India.

This view is no doubt opposed to that of the Nutrition Advisory Committee which considered in 1937 that the Soy bean was in no way superior to the indigenous pulses and as such "the encouragement of the production and consumption of Soy bean need not be made a prominent part of the Nutritional and Agricultural Policy in India". A sub-committee of the Nutrition Advisory Committee which probed further into the matter was ultimately of the same view. The Famine Commission of 1945 also endorsed this conclusion and observed as follows:—

"Soy bean is, of course, a crop of considerable industrial importance. It is a rich source of oil, which has many industrial uses, and it also provides raw material for the manufacture of plastics which are basic to many branches of modern industry. In the United States Soy bean is widely cultivated as an industrial crop. With the growth of industry in India its

cultivation for industrial purposes may be called for. Soy bean flour suitably processed in factories, produced, as in the United States of America, as a by-product of the development of Soy bean cultivation for industrial uses, may be more acceptable and of higher nutritive value than the untreated pulse. Soy bean is a leguminous crop of value as fodder and in the rotation of crops, and the part it could play for these purposes in Indian agriculture is worthy of investigation. With regard, however, to its use as a substitute for common Indian pulses, cultivated, prepared and consumed in the same manner as such pulses, we are in agreement with the findings of the Nutritional Advisory Committee".

There can be no quarrel with the opinion of the Nutrition Experts if they had confined their remarks to the comparative biological values of the proteins in the Soy bean and the common pulses; but when they proceeded to enunciate an agricultural policy based merely on the relative



nutritive values of crops their views are open to criticism : for agricultural policies are inspired essentially by agricultural and economic rather than nutritional considerations. To imagine an instance suppose a committee of Nutrition Experts had stated in 1907 that the nutritive value of the exotic oilseed groundnut was somewhat inferior to that of the indigenous oilseeds like gingelli and as such the development of groundnut cultivation ought not to be a prominent part of the nutritional or agricultural policy of the Madras Government. The Nutrition Experts could have demonstrated that the Calorific, fat and carbohydrate values of the nut were somewhat lower and that the calcium, phosphorous and iron in the nut were a fraction of what the gingelli contained. But 30 years of agriculture in Madras would have shown the adoption of any such policy to have been a blunder. In thirty years from 1907 the extent of gingelli cultivation had shrunk from about 9 to 8 lakhs of acres whereas the area under groundnut had expanded from 8 to 46 lakhs of acres. The reasons for such differential variations are obvious. The acre yield of groundnut is nearly four times that of gingelli and the groundnut commands ready buyers at attractive prices in the international markets. The ryot being no more of a philanthropist than most others preferred to raise a cash crop wherever he could at the expense of land devoted to food crops.

The phenomenal increase in the acreage of groundnut in Madras finds a fitting parallel with a similar increase of cultivation of the Soy bean in America. From 50,000 acres in 1907, the area developed to 5.69 million acres in 1935 and 10.76 million acres in 1942. (Statistical Abstract of the U.S.A., 1943). Thirty two Experi-

mental stations are busy at work in America with over 10,000 varieties of Soy bean evolving the types to suit the different agricultural, nutritional and industrial needs of the country. Several laboratories in America are assiduously adding an increasing number of outlets for the Bean products ranging from breakfast foods to parts of motor cars.

The table hereunder will give a glimpse of the present day uses of the Soy bean. It will be observed, that the bean and its products are utilised for a variety of purposes in industries. It is possible that groundnut or cocoanut, oil and meal can be used with advantage in India for some of the purposes for which the Soy bean is used in America but it cannot be denied that the Soy bean will have its proved and special value until it is shown that the indigenous substitutes are equally efficient and economical. However, that may be, it is clear that any undue emphasis only on the food value of the bean is somewhat out of date.

The Soy bean Sub-committee, however, cautiously concluded that the question of encouragement of the bean should be reconsidered if and when further evidence of its nutritive value became available. The Soy bean has already established itself in North-east Asia, Europe and America as one of the most important food crops of the people and the only question that confronts mankind is how to avail ourselves of its nutritional value in a palatable and inexpensive form. No further evidence of its utility as food seems to be necessary ; but even assuming that the nutritional value of the bean is of the same order as that of the common pulses, the fact that Soy bean has been known to yield over

MODERN USES OF SOY BEAN.

DRIED BEAN.	OIL.	GREEN BEAN.
- Baked Products. - Biscuits. - Bread. - Breakfast foods. - Cakes. - Candies. - Chocolate. - Coffee substitute. - Diabetic foods. - Flour. - Health Drinks. - Ice-cream cones. - Ice-cream powder. - Infant foods. - Invalid food. - Livestock feeds. - Macaroni products. - Meat products. - Soy sauce. - Sprouts.	- Candles. - Celluloid. - Core oil. - Disinfectant. - Electrical Insulation. - Enamels. - Explosives. - Fuel. - Glycerin. - Insecticides. - Lecithin. - Lighting. - Linoleum. - Lubricant. - Medicines. - Oilcloth. - Paints. - Printing ink. - Rubber substitutes. - Soaps (Hard, Liquid, Soft). - Textile dyeing. - Varnishes. - Waterproof for cement. - Waterproof goods.	- Beer. - Flour. - Livestock feeding. - Seasoning powders. - Soy sauce. - Vegetable milk. - Casein. - Condensed milk. - Cheese. - Foods. - Milk powder.
MEAL.	PLANT.	MILK.
- Bakelite substitute. - Celluloid substitute. - Core binder. - Fertilizer. - Glue. - Plastics. - Water paints.	- Fuel. - Green Manure. - Soilage.	- Paints. - Paper size. - Textile dressing. - Waterproofing.
	- Butter substitutes. - Candies. - Chocolate. - Cocoa. - Cooking oils. - Emulsifier. - Lard substitutes. - Margarine.	- Forage. - Hay. - Pasture. - Silage. - Straw.

2,000 lbs. to an acre in parts of Madras as against 200 to 300 lbs. of green or black gram, 300 to 700 lbs. of Bengal gram and 300 to 1,000 lbs. per acre of red gram is of great significance in crop-planning and formulation of food policies for better nutrition in India. The Soy bean can therefore replace even now in some measure some of the pulses in the areas where the relative yield justifies it.

An important and immediate outlet for the Soy bean will be in the manufacture of vegetable milk which has been in use in China and Japan for over five thousand years. According to a process developed in the Bangalore Institute of Science the milk in a more palatable and nutritive form is prepared from the bean after it germinates; the kernels are separated, heated in water for half-an-hour at about 70° C. with a pinch of soda and then made into a paste and boiled with four times their weight of water for half-an-hour after which the milk is strained. The nutritive value of this milk is said to be 90 per cent. of that of pure cow's milk, a commodity which is so difficult to obtain in the bigger cities in India. The vitamin content of the milk is on the whole superior to that of cow's milk. A pound of Soy bean can be used to obtain 8 lbs. or two Madras measures of vegetable milk. About 10 cents of delta land will yield enough beans for producing one Madras measure of milk a day throughout the year! In the initial stages the Soy bean milk could replace the milk used in sweets and milk preparations in which its nutty flavour could be masked by the addition of suitable essences.

A cow yielding about 4,500 lbs. of milk in the year needs on an average about 14,000 lbs. of bulky green fodder,

300 lbs. of groundnut cake, 300 lbs. of cotton seeds and 600 lbs. dholl husks, an amount of feed stuff that can be raised partly as a main and partly as a subsidiary product from three to 4 acres of land. A like quantity of vegetable milk of the same quality can however be had from one-third to half an acre of a successful crop of Soy bean.

The daily consumption of milk in India is now reckoned at 5.8 oz. per head as against 39 oz. in England. There was a fall in consumption by 12 per cent. between 1935 to 1940, whereas in England the consumption increased by 25 per cent. between 1938 to 1941. Cow's milk is a luxury product of agriculture: its production in quantities necessary to satisfy nutritional standards requires an enormous increase in the area under cultivation or a considerable intensification of the area already under cultivation. As the scope for expansion of the area of profitable cultivation is very limited and intensification of cultivation is a complex problem, the importance of Soy bean milk in the agricultural economy of India can hardly be exaggerated.

The latest Famine Commission was of the view that with "the growth of industries in India, the cultivation of Soy bean for industrial purposes might be called for." It may be observed that the spread of groundnut crop with which Soy bean has many common features did not depend upon the prior growth of Indian industries. There is therefore no special reason why the case of Soy bean should be different when the rapidly expanding international market for the bean should suffice for the initial fillip to its cultivation. In Madras the Soy bean should have a ready internal market

in the paints and varnish industries for the Soy bean oil is of a semi-drying type with an iodine number ranging from 118 to 141. It is used in America to replace partially the expensive linseed oil. Madras grows very little of linseed and the output of tobacco oil the only semi-drying oil raised in the province is negligible. An acre of a successful crop of Soy bean will produce 800 lbs. of oil as against 150 lbs. of linseed oil and 80 lbs. of tobacco oil. The development of Soy bean in parts of Madras will therefore immediately help to reduce the import of linseed oil.

The Soy bean is a leguminous crop which matures in from 75 to 170 days. It thrives well in any loamy soil rich in lime, phosphate and potash, but it can be raised even on poor soils provided there is proper drainage and the soil contains the right type of nodule bacteria. If such bacteria are absent the seeds have to be inoculated just before sowing by shaking the moistened seeds with a handful of soil from an area where the Soy bean has been successfully raised with the formation of root nodules. Otherwise the crop will draw upon the meagre supply of nitrogen in the soil and the yield will be uncertain.

One of the chief drawbacks in large scale successful introduction of the Soy bean in any new area is the extraordinary sensitiveness of the plant to changes of soil and climate. For instance, in England the Royal Agricultural Society gave up in despair in 1914 the cultivation of Soy bean after experimenting with it for several years. It was due to the remarkable pertinacity of North, a Curator of the Royal Botanical Society who refused to be defeated, that suitable strains were evolved by 1932 and very success-

ful crops were raised ever since 1933. Another peculiarity of the Soy bean is the enormous variation in the protein and fat content in the different varieties. The percentage of protein ranges from 28 to 54 and of fat from 12 to 26. Wide differences in the iodine number and lecithin value are noticed in different specimens. There is also considerable fluctuation in the percentage of the three principal amino-acids, cystine, tryptophane and tyrosine, the presence of which accounts for much of the nutritive value of the bean. These differences perhaps explain in some measure the differing appraisements of the nutritive value of the bean made by nutrition workers in different countries. Particular varieties have therefore to be selected or bred for each locality for industrial purposes and for use as livestock feed, human food or green manure. The cultivator requires guidance as to the strains that will thrive well in his district and this calls for careful research, selection and breeding where necessary of the high yielding strains with the desired qualities which the industrialist or the consumer wants. Such work has to be undertaken by the State in each and every one of its Agricultural Experimental Stations.

The Madras Agricultural Department experimented for three years with 56 varieties and found that one of the varieties Behrum yielded as much as 2,160 lbs. to an acre of wet land in the West Godavary District as against 1,000 lbs. in Tanjore and another variety PeNgype yielded, 1,800 lbs. in the Godavary District against 2,000 lbs. in Tanjore. Behrum as a dry crop, yielded 1,500 lbs in the Godavary District and a similar yield was obtained in Tanjore, with PeNgype in dry lands. The highest yield obtained outside the deltas was 1,406 lbs. in

Coimbatore, with 'Kolalampur 30'. In Tanjore PeNgype yielded 20,000 lbs. of excellent fodder equal in feeding value to alfalfa when sown after the paddy crop; but this failed to seed. The behaviour of thousands of available varieties under different conditions in different districts has yet to be studied to discover the varieties suited to each district.

The potentialities of the Soy bean have received proper recognition outside India and we cannot shut our eyes to this in our onward march towards better nourishment, better living and balanced abundance. The Soy bean will undoubtedly play a very great

part in stemming some of the drawbacks in the agricultural economy of India. Sustained and systematic experimental investigations of the regional and local adaptations of the bean varieties, coupled with a policy of immediate encouragement of cultivation of the successful strains in select places are therefore called for. This preliminary work will take several years to complete: but if it is to be postponed until industries develop or some more evidence about the nutritive value of the bean is available, in spite of its known high yield, India will be left behind the other nations.

"The animal foods, milk, meat, fish and eggs are prominent in the group of 'protective' foods. Experiments have shown that milk is the best of all supplements to cereal diets, and the improvement in the health and development of Indian children which result from the regular intake of 8 to 12 oz. of milk daily, has been repeatedly demonstrated. We are fully aware of these facts, as well as of the importance of cattle in farm economy, and of the advantages of 'mixed farming' whereby milch cattle contribute manure and add to the fertility of the soil. But looking at the problem realistically, we cannot visualise any immediate possibility of increasing the production of milk to such an extent that it can become a regular article of diet consumed in adequate quantities by the poorer classes in the greater part of India; very reluctantly we conclude that the ideal set by nutrition experts—half a pound of milk or more daily for every child in the country—is not a practicable objective attainable within the next few decades. Every effort must, however, be made to increase supplies of milk products and we regard this as a most important aspect of food policy. The more milk the better, even if all cannot be adequately supplied....."

The Famine Inquiry Commission, 1945. Final Report, page 123.

[We do not congratulate the Famine Commission for what they have said in the extract above. It is the acme of pessimism to shelve the problem of milk supply in India, as one which is impossible of achievement in the near future.

We invite the attention of readers to the long list of uses to which this unique material can be put (page 141). It serves nutrition while advancing industrial production. We will be hitting two birds at a shot, if Soy bean becomes one of the staple products of our land.

—Ed., P.H.]

LIFE IN A VILLAGE

BY

RAO BAHADUR T. S. RADHAKRISHNA AIYAR,
Indian Audit & Accounts Service (Rtd.).

I have been living in the village of TARUVAI, (Tinnevely Dt.), during the last four and a half years and been making continuous efforts to secure better conditions of living for the villagers than they had been enjoying hitherto. In this village, there is a statutory Panchayat Board in existence, consisting of 10 elected members with an elected President, most of whom take little or no interest in the affairs of the Board and it is with great difficulty that the President is able to get a quorum for the monthly meeting, if at all it is held regularly. It is this Panchayat Board, which is entrusted with the sanitary administration of the village consisting of about 3,000 persons and the main source of its income is the annual grant of about Rs. 265 from Government, other items of receipts being negligible. The sanitary service consisted till about a year ago, of one sweeper only on a monthly wage of Rs. 4-8-0.

OFFICIAL APATHY AND RED TAPE.

At my instance, a proposal was made to the Director of Public Health, Madras, to increase the number of sweepers to four, as there were more than 18 streets to be swept, and an assurance was also given that the excess of expenditure over the income would be met by the villagers out of their pockets or by the levy of additional fees by the Board. The proposal had to be submitted in a prescribed form (which no one in Tinnevely was able to supply), through the District Panchayat Officer, District Health Officer, District Board, and Inspector of Local Boards and Municipal Councils whose interest in the provision of sanitary conveniences to the villages was so great, that he did not see his way to recommend the proposal on the ground of its not having satisfied some financial requirement, despite the assurances given by the Board of getting voluntary contributions from the villagers or tapping additional sources of income. The proposal was not therefore sanctioned by the Director of Public Health, Madras, and was rejected twice. Subsequently, I got the demand for additional sweepers reduced to one only and the proposal which was sent again through all the officers referred to above was sanctioned at last. I have

mentioned these facts in detail, to show what great interest the Administrative Head of the Local Boards and Panchayat Department, sitting at Madras takes in improving the amenities of the villages, which is supposed to be his main duty.

SANITATION: NON-EXISTANT.

The village has no latrines, the open spaces surrounding it being used as such by both males and females. Drains of any kind do not exist, the waste water being allowed to stagnate in the outer backyard of every house in which pigs wallow to their heart's content. The refuse and dung heaps of each house are allowed to accumulate in pits at the backyard, till they are removed twice a year to the paddy fields for manure purposes. These pits serve as breeding grounds for mosquitoes and flies, which multiply profusely and rapidly causing considerable annoyance to the residence of the village, who cannot all afford to provide themselves with mosquito curtains or flies-destroying chemicals. The only source of drinking water is the irrigation canal running nearby, where every one bathes and cleans himself after attending to the calls of nature, and where clothes are washed by ordinary people and the washermen as well. Cattle dip themselves freely in the canal and dead fish brought for sale to the weekly market are immersed prior to their being disposed of. It is this water surviving all these operations which is used for drinking purposes by the villagers without being boiled, at all times of the year, except for two months when the canal is dry. When I first came to the village, I dreaded drinking such water and wondered why a much larger number of people did not die of cholera and other water-borne diseases year after year. I may state here that cholera takes its toll of human lives year after year or every alternate year unfailingly. There is only one tube well which provides non-brackish water, but the pump is often under repairs due to rough handling by the villagers, the surroundings are so insanitary and clothes of cholera patients are at times washed nearby, so that it is considered more risky to use that water for drinking purposes, than the canal water. The fact that I have survived four

years' use of such water does not prove anything. I wish all villagers do take the precautions I endeavour to take with my little knowledge of hygiene. Of immunity, even experts know little. It is idle to talk of immunity and to continue to neglect sanitation.

I made a proposal to the villagers that pig breeding by a set of people should be restricted, as pigs rapidly multiplied, caused considerable damage to plants and made it impossible for any vegetables to be grown in the backyards of the houses bordering the canal. This proposal was strongly objected to by the villagers, as pigs were the only scavengers in this village and in their absence, all open spaces would be full of dung heaps making the whole village unfit to live in!

Such is the condition of an important village in this district situated within a distance

of 6 miles from the Headquarters and frequently visited by the District Officers of the Revenue, Medical, Educational, Police, Agricultural, Engineering and other Departments. Such stagnation in village life is often glibly attributed to the indifference and apathy of the villagers, but I can emphatically assert as a result of 4 years' stay in this village, that the apathy and indifference of the Government Departments are solely responsible for the backward condition of all villages. The officials, generally lack initiative and interest and fight shy of considering any suggestions for improvements made to them, lest they should be required to do some additional work beyond their routine duties. I trust, that with the establishment of National Government, villages will receive greater attention than heretofore and be made more fit for living in by all persons desirous of doing so.

CAUSES OF THE LOW LEVEL OF HEALTH IN INDIA.

The maintenance of the public health requires the fulfilment of certain fundamental conditions, which include the provision of an environment conducive to healthful living, adequate nutrition, the availability of health protection, preventive and curative, to all members of the community irrespective of their ability to pay for it and the active co-operation of the people in the maintenance of their own health. The large amount of preventible suffering and mortality to which reference has already been made is mainly the result of an inadequacy of provision in respect of these fundamental factors. Environmental sanitation is at a low level in most parts of the country, mal-nutrition and under-nutrition reduce the vitality and power to resistance of an appreciable section of the population and the existing health services are altogether inadequate to meet the needs of the people, while lack of general education and health education add materially to the difficulty of overcoming the indifference with which the people tolerate the insanitary conditions around them and the large amount of sickness that prevails.

(Report of the Health Survey and Development Committee, 1946, Vol. 1, page 11.)

PREVENTION AND CONTROL OF FOOD ADULTERATION

BY

DR. S. V. ANANTAKRISHNAN, M.A., PH.D.,

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Tennyson is reported to have written in 1854, "And chalk and alum and plaster are sold to the poor for bread and the spirit of madness works in the very means of life." One wonders whether he was prophesying about conditions in this country during the latter half of World War II and its aftermath. Humanity is considered to have progressed with increasing knowledge in every direction but one cannot help remarking that morality has probably taken the wrong direction. The purpose of any food adulteration law is to serve as a deterrent for those "businessmen" who do not hesitate to produce and distribute adulterated food. Like other antisocial uses of science, food adulteration has also received the attention of unscrupulous men of science and the detection and prevention of this abuse of science is a necessary duty of any progressive state.

We have in this province the nucleus of an organisation for assisting in the administration of food adulteration laws which are themselves very modest in their scope. A small part of an institution primarily intended for preventive medicine, with a small staff is expected to look after the requirements of the whole Province, only the City having a separate establishment for food analysis. In 1937, the last year in which the Institute of Chemistry of Great Britain published a list of Official Chemical appointments, one finds that England and Wales alone had more than two hundred analysts with requisite qualification for this work. It does not require very much of technical knowledge or imagination to see that



the measures taken in the province are far from adequate. *If one considers as adulteration any material added to a foodstuff of one description which is foreign to such a foodstuff, barring fresh vegetables and fruits, every article of food that we get is adulterated.* In addition to adulteration, we have also to consider as dangerous to public health any cereal or other food which indicates signs of any decay. One has also to remember that adulteration of food invariably precedes the discovery of means of detecting such frauds. Paying due attention to all factors of the problem, one has to consider the steps needed to enable the common man to get wholesome unadulterated food.

Any scientific establishment necessary in the interests of public health requires properly qualified chemists on the analytical and research side. The latter practically does not exist in our country. It is interesting to quote the relevant

portions of a leaflet published by the Ministry of Health in Britain in 1929:

"If a person appointed does not already hold an appointment as Public Analyst, it is necessary for him to provide documentary evidence of competency in analytical chemistry, therapeutics and microscopy.

"The Minister will ordinarily accept as sufficient evidence of competence in all three subjects the diploma of Fellowship or Associateship of the Institute of Chemistry of Great Britain and Ireland together with a certificate granted by the Institute after an examination conducted by them in the Chemistry (including Microscopy) of Food and Drugs and Water.

"Where a candidate for the office of Public Analyst does not possess the specific evidence of competence mentioned above, it is necessary for him to produce documentary evidence that he has attained an equivalent degree of competence in each of the three subjects. A personal testimonial is of no value unless it is given by a person who is himself a recognised expert of high standing in the subjects in question and testifies to his personal knowledge of the proficiency of the candidate in these subjects."

Situated as we are now, inadequacy of qualified personnel is a problem that has to be tackled first. It is not necessary or desirable that the needs of our country in this direction should be tacked on to an examination conducted by an organisation in another country. The prospect of having the mother tongue as the medium of instruction in universities also makes it necessary to consider alternative methods. While the existing Public Analyst's laboratories can be used for the initial period of training suitable candidates, it is necessary to have an independent professional body that will maintain adequate standards similar to the Institute in Great Britain and not like our Universities. A purely Governmental Organisation without professional men having a live interest in the advancement of their science cannot be an

adequate substitute. Graduates in Chemistry who have been given some training in the Public Analyst's laboratories whose competence is tested by such an independent body are required before launching on a development for the proper control of food adulteration.

The organisation of a technical food department is equally worthy of consideration. The province should have a central institution for research in analytical methods pertaining to various food products, detection of adulteration in new products, and preparing a proper specification of standards of purity of various food products that will serve as a guide for administration by the public health department. An omnibus institution where the greater part of the work is of a routine nature with an overworked staff cannot be expected to achieve much in this direction. For a proper working of food adulteration laws, it is desirable to minimise the interval between the taking of a test-sample and its analysis. This necessarily implies a degree of decentralisation. One need not be perturbed by the cost of such a project. Almost all the districts in the province have one or more institutions training students to the degree standard in chemistry and their equipment can be expected to be better when the standards are raised. Even otherwise, the addition that may be needed in order to provide one or two rooms for an analytical laboratory for this purpose will be far less costly than building up a separate laboratory. The staffing for each district will naturally depend on its area, population and the extent of adulteration prevalent. An analysis of the records of the Public Analysts laboratory during the last fifteen years can serve as a rough guide which later experience with a decentralised organisation may modify.

It is not our purpose here nor is it a necessity, to suggest any detailed plan. The situation is one that cannot be viewed with any complacency by popular government. Any industrial or other development that can be planned for the future necessarily depends on the existence of healthy workers. So long as we have the profit

motive in the production and distribution of food, producers and distributors will compete in food adulteration and, unless the state steps in with a strong hand, the deleterious consequence of such food must make itself felt in every other development that is essential for the well-being of our country.

The Food Division is the leader in the development of scientific methods of food-law enforcement. It is a repository of existing technical knowledge and a workshop for improving and developing methods of analysis for establishing definite proof of violations. It acts as a reviewing laboratory on cases developed under the food provisions of the several acts and furnishes expert witnesses for court cases. It prepares project plans on foods and initiates and executes the investigational work which is an essential preliminary to regulatory activity. In such investigations the Food Division, with the assistance of the field force, ascertains current trade practices through the medium of factory inspections; prepares and subsequently analyzes experimental packs of food products; determines the composition of numerous market samples; and acquires information concerning consumer understanding of the composition of foods and various trade terms. Special investigations are necessary in connection with the formulation of food standards. Finally, the Food Division must supply the information essential to the formulation of appropriate food regulations.

While *misbranding* is concerned with labeling representations, *adulteration* is concerned with the content of foods, drugs, or cosmetics. A food, drug, or cosmetic is adulterated when it consists in whole or in part of any filthy, putrid, or decomposed substance. Preparation, packing, or storage under insanitary conditions which might contaminate it or render it injurious to health are also forms of adulteration. The same is true when containers are composed of poisonous or deleterious substances, or when a product bears or contains a noncertified coal-tar color.

Provided they are not in a quantity sufficient to injure the health of the user, foods may contain substances which, though poisonous or deleterious, are indispensable and cannot be avoided by good manufacturing practice. No part of any food may be the product of a diseased animal or of an animal which has died other than by slaughter. Prohibited, moreover, are deceptions such as those which conceal damage or inferiority increase bulk or weight, reduce quality or strength, disguise the absence of valuable constituents, or make a food appear better or of greater value than it is.

A food is defined as adulterated if, among other things, any substance has been mixed or packed with it so as to reduce its quality or strength, or if any substance has been substituted wholly or in part therefor. These provisions in themselves imply the existence of definitions and standards of identity and quality: no one can tell when an article is adulterated under them without first determining definitely what constitutes the unadulterated product.

(From the Food and Drug Administration: Federal Security Agency, U.S.A.)

HEALTH AND HABITS

BY

RAO BAHADUR V. A. AYYAR, B.A., B.E., I.S.E., (Retd.)

Chief Engineer and Post-war Development Officer, Mewar Govt., (Rajaputana).

As the saying goes in regard to 'Greatness,' some are born 'Healthy,' some have to acquire 'Health,' and some have 'Health' to be thrust upon them. In the case of those who are born 'Healthy' or who acquire 'Health,' there is still the problem of 'maintaining their health.' The solution to this lies, first, in providing and maintaining a proper environment both outside and inside the home and secondly, in the people themselves acquiring correct habits of life, which again will have their repercussions on the policy and activities of the Public Health authorities in regard to 'external environment.' The formation of correct habits is the result of a synthesis of 'feeling,' 'thinking,' and 'action.' 'Feeling,' is almost the sole motivation of action among animals, although it is often called 'instinct.' The difference in 'man,' who occupies a higher stage in Evolution is that the process of 'thinking,' intervenes between 'feeling,' and 'action.' The extent to which 'sound thinking,' directs and regulates 'actions' marks the degree of cultural advancement of the individual, and by repeated processes of 'thinking' and 'action,' decides the quick formation and fixation of 'correct habits.' But only 'feeling' can initiate 'live thinking,' and 'action,' while only 'sustained feeling,' can maintain 'sustained activity' in the same direction. The 'feeling' may be one of 'reverence' to authority, 'devotion' to individuals, or one or other of the other feelings of 'love,' 'hatred,' 'pity,' 'sympathy,' 'horror,' etc. The first two are 'child-like'—I do not say 'childish'—and sooner or later gives way to others, when knowledge accumulates and reason asserts itself. Unless correct habits of life have already become fixed by virtue of the feelings of 'reverence' or 'devotion,' these can be acquired and maintained only by exciting one of the other feelings, followed by continuous thinking backed by knowledge, and repeated action. These produce a mental set, which gives some individuals, although rarely, a 'vision' depicting 'Distress' on one side and a 'solution' and 'happiness' on the other.

The first thing therefore that an educated individual could do in the matter of acquiring and/or maintaining his own health as well as that of his neighbours, is to acquire a sufficient knowledge of the factors and conditions governing health, personal as well as environmental, and of how problems connected with these have been solved by others, here and elsewhere.

He can then adopt suitable measures himself by correcting his own habits as well as of those nearest to him, and also express his feelings and experiences to the public as well as the authorities charged with the duty of solving these problems. This must be done without fear or favour, and should not be aimed at, nor considered as being aimed at personalities. This is particularly stressed as, in our country, and criticism is immediately followed by enquiry as to against whom the criticism is directed or to whom it refers, and what the motive of the critic is in offering the criticism which is 'obviously' intended to expose the other individual. The aim of the reader of the criticism, as well as that of the critic and of the individual whose work or default is criticised, should be, not to go for any individual, crying him down or supporting him, but to find out solutions to the conditions complained against. It is in this light that the criticism in "PEOPLE'S HEALTH," should be viewed.

While large numbers of people have opportunities of acquiring knowledge, developing, thinking, and thus becoming inspired by feeling the majority of our countrymen, will for a long time to come, be without such means. It will therefore be the bounden duty of the former, guided by visions like those of the Editor of "PEOPLE'S HEALTH," to express their feelings, and direct their thoughts, and activities. These should be backed by knowledge so as to have 'health thrust upon' the 'uninformed' millions of our countrymen who are now steeped in ante-diluvian ideas, who are dominated by fatalistic outlook, and who are following insanitary modes of living. Knowledge is always wealth and knowledge of health, doubly so. Said our ancients,

"Is Knowledge Wealth? Yes, Wealth it is,
And that beyond compare, methinks;
Nor thieves can steal, nor Kings can tax,
Nor deed we share it with our kin,
Nor fear need we to keep it safe;
And lo! when it's put to use we find
Ourselves more 'wealthier' than before."

Right knowledge, Right feeling and Right thinking, must make us, the educated form right habits, thereby helping others to do so. Combined with fearless expression, these will impress on the concerned authorities the urgent necessity for effecting measures of improvement in environmental sanitation.

HEALTH WORKERS!

FOR YOUR BENEFIT

BY

ONE OF YOU.

REFER YOUR PROBLEMS TO US. THEY MAY BE BAFFLING OTHER WORKERS ALSO. WE SHALL HELP TO SOLVE THEM. IF YOU HAVE SOLVED ANY OF THEM, LET US KNOW. IT WILL BENEFIT OTHERS.

[Ed., P.H.]

GREETINGS!

We promised to treat you to an interesting portion of the story of ventilation; that portion in which the old theories were upset. The investigations, observations and inferences that led to this have been going on for nearly half a century. They were very varied and wide. They have been carried out in several countries. A complete account of all the work will be voluminous. We shall therefore mention just the outstanding ones. Even in that let us avoid elaborate descriptions. We need only the significant parts—parts which add to our knowledge of things.

* * * *

The work done was on three lines. One was a series of observations made by experts as things happened naturally. The second was careful, experiments planned on a small scale. The third was a series of data observed under controlled conditions on a bigger scale with large gatherings of persons. Each one revealed something which was against the then accepted basis of ventilation, namely, that good ventilation must permit only 0.02 per cent. of carbon dioxide, the "permissible respiratory impurity."

* * * *

The carbon dioxide theory stimulated hygienists to analyse the air of several places. They went about estimating the carbon dioxide in the air of houses, factories, theatres and other buildings. Not content with this, they went above and below the earth and wherever man went. Along with carbon dioxide, in some places they estimated the oxygen also. Here

are a few representative observations that they made:—

1. In London schools, air was purified and pumped into the class rooms. There was no excess of carbon dioxide in it. Yet the School Board observed that this pure air did not have the desired physiological effect. The pupils were uncomfortable; they felt the air dry and inert.

2. The School Board then made a simple test. To the purified air which was being pumped into the class room, was added carbon dioxide in large quantities—up to 0.6 per cent., far in excess of the permitted limit. The pupils breathed this air. They were none the worse for it. They felt the same uncomfortable feeling of dryness as with pure air.

3. This test was repeated by Pattenkoffler and by Angus Smith. The former added carbon dioxide up to 1.0 per cent.; the people who breathed this air did not show any discomfort. Angus Smith went further. He added carbon dioxide up to 3 per cent. before he was able to notice the least discomfort in those who breathed it.

4. In several schools, assembly halls, and other places where people gathered, the carbon

Note.—Although this section is addressed primarily to Health Workers who are usually trained for the profession, the "common-man" would be profited by perusing it.

—Ed., P.H.

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dioxide was observed to rise usually to 0.5 per cent. With this high proportion, the occupants never felt any discomfort at all. They were all satisfied that ventilation was all right.

5. The air in breweries always had a high amount of carbon dioxide. The quantity was 2 to 3 per cent. In all those breweries the workmen breathed this enormous excess of carbon dioxide constantly, and yet were quite happy. They never imagined that the ventilation of those buildings was anything but good.

6. People who dive in the sea are often sent down in an apparatus called the "Diving Bell." The air inside this was limited. The diver added to its carbon dioxide content by breathing. The amount increased up to 3 per cent. usually. In rebreathing this air, the diver was quite healthy.

7. People live comfortably on mountain tops. They seldom complain of bad ventilation. Yet even the outdoor air at this height has only 12 to 14 per cent. of oxygen. This is two-thirds of that at sea level. Aviators flying up to 12,000 feet height do not feel discomfort by breathing air which has only 14 per cent. of oxygen at that height. It is beyond this height that aviators turn on their oxygen supply.

8. The amount of oxygen in the air of rooms and halls which were over-crowded and ill-ventilated was estimated in many places. It was found to be 20.65 per cent., while the proportion in fresh air was 20.95 per cent. The reduction was too small. Any discomfort felt in such rooms could not have been due to lack of oxygen.

* * * *

While these observations were made, Haldane, an eminent physiologist investigated minutely the phenomenon of human respiration. He collected the air in the innermost portion of the lungs—the alveoli. It is in the alveoli that oxygen is given to and carbon dioxide removed from the blood. He analysed the alveolar air and found it has a fairly constant composition. The composition was not altered substantially by any excess of carbon dioxide or deficit of oxygen in the air that is breathed in. This means that the body took in whatever oxygen it wanted and threw out the carbon dioxide not needed; this it did irrespective of any change in the air breathed in. It is because of this that the residue left in the alveoli remains unchanged in composition. Haldane found that this alveolar air has only 14 per cent. oxygen, while it had as much as 6 per cent. of carbon dioxide. It is this low oxygen and the highly injurious amount of carbon dioxide

that is ever present in our lungs, that is ever in contact with our blood. Yet we come to no harm by it.

Haldane also noted a few more interesting things. Till the carbon dioxide in the air increases to 3 per cent., our breathing remains perfectly normal and healthy. At 3 per cent., breathing begins to be more frequent and deep. As the carbon dioxide increases further, breathing becomes deeper and difficult—we 'pant' for breath. When it comes to 5 per cent., poisonous symptoms are seen. The usual percentage of carbon dioxide in occupied rooms was found to be 0.5 per cent.; this concentration produces no appreciable alteration in our breathing.

* * * *

These observations set people thinking. They began to doubt the carbon dioxide theory. Their belief in it waned. As the observations were repeated and confirmed, it was evident that increased carbon dioxide in occupied rooms caused no injury to health. The discomfort felt in badly ventilated rooms was not due to excess of carbon dioxide or diminution of oxygen.

When a pet theory is forced to be discarded it naturally evokes further interest. If it is not carbon dioxide that produces the ill effect of bad ventilation it must be something else. And that something must be found. Without knowing it, we cannot say what is harmful or bad ventilation. The only way this something could be found was by experimenting with ventilation. Make all possible changes in ventilation. See what effect each change has on man. Then we will know on what factors ventilation is based. Knowing the factors, we can say easily when ventilation is good and when harmful.

Haldane was the first in the field. He made no experiment. But he observed the other factors present in badly ventilated places. He noticed that increase in temperature and humidity of the air made a room uncomfortable. He found that workers in coal mines were unable to work when the wet bulb temperature was 89°F.—which represents a very high degree of humidity. This was confirmed by Harvey Sutton, School Hygienist in Australia, by experiments on himself. But the two classical experiments were the following.

* * * *

Flugge—the author of "Droplet Infection"—worked in Breslau and developed the heat retention theory. His experiment was a simple

one. He erected a glass chamber of 100 Cft. capacity. The chamber had contrivances for altering the temperature, humidity, movement and carbon dioxide of the air inside it. He put a man inside the chamber and then changed these conditions one after the other. This is what he observed:—

1. Temperature kept at 69° F.—Humidity increased from 47 to 72 per cent.—Carbon dioxide increased to 0.1 or even 0.16 per cent.—The occupant remained for hours and hours without any trouble.

2. Temperature 96° F. (what we have most of the year)—Humidity 90 per cent.—Carbon dioxide only 0.13 per cent.—Occupant could endure this for a few minutes only. He felt extreme discomfort.

3. Same temperature, humidity and carbon dioxide as above—air set in motion—discomfort vanished.

He then altered his chamber slightly. He put the man's head alone inside the chamber while his body remained outside in fresh air. The man was then made to breathe warm moist foul air as in the second observation above. He felt no discomfort. The position was then reversed. The person was placed with his body inside the chamber and his head outside. He breathed fresh air which was cool. His body was surrounded with warm moist foul air which was not in motion. He could not bear it for more than a few minutes. When the same warm moist foul air round this body was set in motion he felt quite comfortable.

* * * *

The work of Flugge was reviewed, retested and simplified by Leonard Hill. He used a glass chamber like Flugge. Instead of one person, he put in a party of eight students. And in some of his experiments, he gave them measurable physical work; in others he set them mental tasks like solving problems. Instead of using an altered chamber like Flugge, he withdrew the vitiated air from this chamber and made students sitting in fresh air breathe it through a mask. Inside the chamber itself, he supplied the students with fresh air through a mask for breathing, while their bodies were surrounded by the foul air. His observations were the same as those of Flugge. Mere breathing in of air which has much carbon dioxide had no effect on the students. When temperature and humidity increased and the air was still, they showed all symptoms which people felt when they were crowded together in ill-ventilated rooms. The students felt drowsy,

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they had headache, a feeling of oppression, and an over-powering laziness. They were unable to do even mental work. When the temperature or humidity was lowered, the symptoms vanished. The students became cheerful and resumed their tasks. Keeping the same high temperature and humidity, the air was set in motion by an electric fan. That was enough to make the symptoms disappear and restore their cheerfulness.

* * * *

We mentioned the observations made by workers in natural conditions. We described two classical experiments, one with a single person, and the other with a band of eight students. The validity of the observations was not questioned. Yet, some doubted whether the reactions of a small body of students specially chosen for the experiment can be taken to be what is felt by persons living and working in their usual environment and not in an experimental chamber. This doubt was cleared in America. About the time Leonard Hill was carrying on his experiments, many hygienists in America explored this problem independently. The chief among them were the New York Commission, the Chicago Commission, and the American Society of Heating and Ventilating Engineers. The work of these three bodies was well coordinated. It covered every field. It was made in the home, in the school, in the factory, in the office, and in the public hall. It was made when people carried on their normal activities in their usual surroundings. The only thing that was varied was the factors affecting ventilation. The work lasted several years. It was of outstanding interest. In essence they confirmed what Leonard Hill observed. The results were the same. The real cause of the evil effects of ventilation became well established. It is not the excess of respiratory impurity in the form of carbon dioxide. The real reason is the interference with the heat loss from the body. The heat loss in turn depends on the temperature, humidity and motion of the air primarily. It also depends, to some extent, on the clothing we wear and the work we do. Since we can easily adjust our clothing and our work, the three primary factors are the ones most concerned in ventilation. Good ventilation therefore depends on maintaining these three conditions of air at the proper level.

* * * *

Now, what is this so called proper level at which these factors of ventilation are to

be maintained? By what index are we to know which is the proper level? How are we to measure this? How can ventilation on this basis be graded as good or bad? These questions naturally arose in the minds of the American workers at the very outset. They therefore planned their work with two objects. One was to confirm the heat retention theory. This was not so important as the experiments of Flugge and Leonard Hill were conclusive enough. The more important object was different. It was to determine the best index of ventilation and the best way of measuring it. This second object was pursued by several other workers including Leonard Hill.

The authors of the respiratory impurity took smell as the index, and carbon dioxide as the measuring stick. The requirements of the ventilation were worked out on these two. If heat retention or heat loss is the basis of ventilation, what should be the index? It was not easy to pitch upon any one sharp feature as the index of normal physiological condition. The investigators noticed that the very first impression made on any person by the smallest interference with heat retention or heat loss is a feeling of discomfort. When ventilation is bad in hot climates, heat loss is reduced; we feel uncomfortably hot. In cold climates heat loss is too much and we feel uncomfortably cool. So long as ventilation is good, heat is lost normally and we feel quite comfortable. There can therefore be no better index of ventilation than our feeling of comfort; because it gives the best clue to the state of ventilation. The moment ventilation fails, comfort gives place to discomfort.

Comfort may be a good index. But does it not depend so much on the individual? Do two persons have the same feeling under the same conditions? No. The sense of comfort varies from person to person. The variation may not be much; but it does differ. How then are we to know reliably whether a certain ventilation condition will be really comfortable? The American workers hit upon the obvious solution. They made their observations on large masses of people. These gatherings were made up of persons of different ages and both sexes. After subjecting this vast group to a given ventilation, they took the vote of every member of the group. Whenever the majority of the members felt comfortable, that was taken as the most suitable ventilation. The Americans were not satisfied with a small majority. They

fixed the acceptable vote at 85 per cent. Unless 85 per cent. of the persons voted a condition as comfortable, it was not considered satisfactory.

As they proceeded with their observations, the Americans met with another snag. They found that the comfort vote was not given at one particular stage of ventilation. Several grades of ventilation were felt equally comfortable. It was not one particular temperature combined with one given humidity and coupled with a certain rate of movement of air, that alone induced a feeling of comfort. The occupants were quite comfortable under different combinations of these three factors. In other words, comfort was felt not at one particular cooling power of the air. Comfort ranged between two cooling powers. This is because our body has the capacity to adjust itself to the surroundings to some extent. Comfort depends on the ease with which our body is able to maintain normal temperature. When the cooling power of the air changes, our heat regulation mechanism changes to suit it. Our feeling of comfort persists. This is possible within certain limits. If the cooling power of the air varies widely, then our body adjustment fails and we feel uncomfortable. The range of conditions within which the body adjusts itself and feels comfortable is known as the "COMFORT ZONE".

This "Comfort Zone" then is the index of ventilation. Whatever ventilation induces a feeling of comfort is good. It remains good even though ventilation is altered, so long as the resultant cooling power is within the Comfort Zone. Beyond the Comfort Zone, lies the Discomfort Zone. In this, our body is put to great strain; but it does not break down. With effort the heat regulating mechanism tries to keep the body temperature normal. This is what we feel when we are in an over-crowded railway carriage, or in the thick of a crowd inside temple. We call this bad ventilation. Suppose we are put in worse places. We pass beyond the Discomfort Zone. Even with the utmost effort one's body cannot keep up normal temperature. Our body heat goes up to great heights. We get heat stroke. This heat stroke produces a shock which interferes with the working of the heart. It is quickly fatal. It is this condition which accounted for the death of the victims in the so-called "Black Hole of Calcutta", and in the more recent Moplah Train Tragedy.

READERS' FORUM.

This section is open to readers for their frank, free and fearless expression of views on all aspects of people's health.

Type-written letters facilitate work.

Rationing of paper restricts space. Brevity is the soul of wit.

Please remember that "People's Health" is above communal party or personal politics.—
(Ed., P.H.)

Rao Bahadur T. S. RADHA KRISHNA IYER, *Indian Audit and Accounts Service (Retd.)*, writes:—

I have read your "People's Health" of October and November, 1946. I have found them both instructive and interesting. It should strike even a casual reader, that you are taking a very great personal interest in selecting the articles for publication so as to benefit a large body of the reading public. I wish you great success in your laudable endeavour.

I enclose a note on "Life in a Village" in which I have given expression to my experiences during my four and a half years' stay here. In regard to protected water supply and Sanitary conveniences, other villages are worse than mine, not having even a canal of running water for providing them with drinking water. A few days ago a human corpse was found floating in the canal of this village in a decomposed condition and the village authorities thought it safer to let it go to another village down the canal, rather than take it out of water and make a report to the police. Even while the corpse was floating, the canal water was taken by the villagers for drinking purposes. Only god should help them. I am sure the National Government after perusal of all the articles published by you will ensure the provision of protected water supply for all the villages consisting of 2,000 inhabitants or over, Sanitary conveniences, a regular hospital with a mid-wife and arrangements for the destruction of mosquitoes, flies and other pests. Otherwise "Back to the Villages" is an empty cry which no one can take seriously in the interests of his health.

If you think my article is worth anything you may publish it in your next journal, I shall follow it up with further contribution in the same nature, if you desire.

The article referred to is published in page 145 of this issue. We welcome

articles from educated people who have settled in villages and who have a heart to do their bit in improving village life. Such articles will help to open the eyes of the arm chair experts at the headquarters and of the administrators, if they have eyes at all.

COMMONSENSE v. CORPORATION ENGINEERING.

In November issue of "People's Health" I read with intense interest the professional engineer's letter criticising the new hump which is created in Gopathi Road. The writer apparently belongs to the 'upper class'. He has dealt with the subject from a professional man's point of view. Please permit me to present the common man's point of view on the subject.

No. 13 bus route is very popular as many others. Those who travel in that bus are shaken to their bones while passing over this new hump. The busses are rickety enough and the passengers are given a thorough shake up while passing over the new hump. The Corporation, far from improving matters, have made the conditions worse. It is notorious that most of our roads have become regular water-courses during rain. Water is the worst destructive element in the roads. Pot-holes are found every where. Motor cars move over them like grass hoppers! I have observed owners of small cars getting stranded by the breakage of the spring plates. Can you not arrange to give a few decisions of the Courts of Law to bring home to the mind of the Highway Authorities their responsibilities in the matter? 'Law and People's Health' is an important section of your magazine. It helps to educate both the authorities and the man in the street as to their respective legal responsibilities and duties. May I request our lawyer friends

to extract a few cases relating to the liabilities of the Highway Authorities for their negligence in the maintenance of our highways? I do not suggest this course to land the Highway Authorities in litigation but only to impress on them their duty in the matter. The subject is of general importance.

Before I conclude this letter, I wish to draw public attention to the fact that the formation of the so-called footpaths has only tended to block the free drainage of the road surface. The roads in consequence get flooded. I have seen labourers trying to push the stagnant water with brooms! Our engineers seem to forget even levels! Is there any hope for the citizens of Madras? Will the new Mayor of Madras who has to his credit over quarter of century's civic service, interest himself in this and other matters over which the common man is deeply concerned?

P.R.S.

INFECTIOUS DISEASES HOSPITAL.

The Madras Public Health Act provides for the provision of infectious diseases hospitals. So far as the City of Madras is concerned, there is only one in the northernmost extremity of the city. There is not one to serve the southern portions of the city. So much so, it is difficult to persuade the patients to go to the infectious diseases hospital located in the out of the way and far off place. From my experience as a general practitioner, the want of adequate provision of infectious diseases hospital, is responsible for many cases of infective diseases not being brought to the notice of the health authorities at all. I believe that the ancient ideas of locating infectious diseases hospital in out of the way places has been exploded. If the general practitioners are unable to discharge the duty imposed on them by the Madras Public Health Act, it is due to the fact that there are no facilities for segregating the patients. May I request the City Corporation and the Director of Public Health to look into the matter and *take immediate steps* to provide as many infectious diseases hospitals as may be necessary for a large city like Madras?

What applies to the City of Madras applies to the mofussil municipalities as well.

GENERAL PRACTITIONER.

DON'T DO AS I DO! DO AS I TELL YOU!

The Madras Electric Supply Corporation is now vigorous in examining the domestic electric installations and in issuing notices to owners to rectify defects. This is quite laudable and every householder is bound to co-operate with the Electric Corporation. But the dearth of materials is a serious handicap to householders. They are expensive even if available. On the ground that spare parts and materials are not available, our tram cars have reached a deplorable state of despair. The passengers get electric shocks unexpectedly! Sometimes the tram cars catch fire much to the dismay of the passengers. The overhead wires snap more often than ever before. The traffic is interrupted and the passengers are exposed to risks and inconveniences. Is it not the duty of the tramway company to set their home in order before calling upon the householders to rectify defects? The Tramway Company is owned by the Madras Electric Supply Corporation. Why should not the Electric Supply Company take action in putting their cars in order? How far they are liable to pay damages to the passengers is a matter about which I do not feel competent to talk.

In this connection, I wish to recall the debate in the Madras City Council on the condition of the trams. A high sounding resolution was passed after vehement speeches by our City Fathers. One would like to know what action was taken on the resolution and what steps the Corporation took to see that their resolution is respected and acted upon.

Much is said about noise and its effects on health. The moving tram cars create literally a hell of a noise. This may be due to many causes including the rickety state of the coaches. Instead of attempting to repair these dilapidated tram cars, why not introduce trolley buses in the city? Public opinion in this matter should assert itself and the City Fathers owe a duty to the rate-payers.

"SUFFERER".

LAW AND PEOPLE'S HEALTH

COUNCILLOR'S ATTACK ON OFFICIALS

Mr. Justice Atkinson, sitting in the High Court, King's Bench Division, on June 7th, gave judgment on behalf of the Plaintiff in the action "Adrian Alexander Hamilton v. Frederic Bower Alcock."

The action was brought by Mr. Hamilton, Surveyor to the Wilmslow (Cheshire) U.D.C., since 1940. He complained of a letter from Mr. Alcock, a member of the Urban District Council, published in the "Wilmslow Advertiser," dated December 24th, 1943. In the course of that letter Mr. Alcock had written "within recent years the Council has appointed several key officials at, having regard to qualifications and experience, handsome salaries. I have in these cases reduced my advice to a written formula and tendered it to the chairman. It is and will be 'High qualifications,' wide experience, mature judgment." Never

The defendant, who is 75 years of age, was before retirement in the service of the Ministry of Health. After several attempts he was elected a member of the Urban District Council. Mr. Alcock, said his Lordship, attached very great importance to Town Planning and considered that Wilmslow had grown up in a rather higgledy-piggledy sort of way and that town planning was a matter of great importance for its future. He had been urging for a long time that the Council ought to get a broad outline scheme prepared by an outstanding expert. Ultimately, in October, 1943, the Council appointed somebody of international reputation to prepare a scheme at an agreed fee of £2,000.

His Lordship said there was not the smallest doubt that the words used in the letter, obviously spoken of the plaintiff in his office, were capable of a defamatory meaning. The Defendant had failed to give any facts on which his opinion

Ignorance of law is no excuse. Therefore a person has to act on his peril even though he may not know his legal obligation. Hence, it is necessary to educate the 'Common man' on the subject.

By giving extracts from the decisions of the Courts of Law in these columns, we do not encourage or recommend people to resort to litigation, at the slightest provocation. Our purpose is only to bring to notice the duty which the public authorities or individuals owe to the people and the rights and duties of individual citizen. *It should be remembered that litigation is an expensive luxury.*

—Ed., P. H.

has that commonsense advice been accepted, and no single official of the Council distantly approaches the standard laid down in the formula."

Mr. Justice Atkinson, who heard the case without a jury, in the course of his judgment said Mr. Hamilton was a Bachelor of Engineering (Liverpool), an Associate Member of the Institution of Civil Engineers and an Associate Member of the Institution of Municipal and County Engineers. Both of these two latter qualifications depended upon examinations and no one had suggested that there was a higher qualification open to him to obtain in his line of work. His examinations included housing, town planning and architecture. He had had 10 years' varied experience before his appointment at the age of 33 as Engineer of Wilmslow U.D.C. His salary was £500 a year.

was based, so the letter could not be defended on the ground of fair comment. "To my mind it was a grossly unfair statement to have made."

The Defendant ignored the first letter sent to him by the Institution of Municipal and County Engineers. Later, as a result of a subsequent communication from the Institution's solicitors, Mr. Alcock did offer to send a letter to the newspaper in question, but the suggested phrasing of it was in such a form that it merely seized the opportunity to restate his views as it amounted to saying he did not find fault with the Plaintiff but he really found fault with the people who were such fools as to appoint him. The Defendant, even in Court, added his Lordship had not made anything in the nature of an apology.

Mr. Justice Atkinson stated he had been informed that the Plaintiff did not want the sort of damages that a jury would have awarded him. But it had got to be a sum which would indicate there was no foundation for the attack on Mr. Hamilton and no justification for it whatever. He could not, therefore, award a smaller sum than £100 with costs.—(*J. Inst. M. & Cy. E., Vol. LXXII, No. 1*).

LIABILITY OF VENDOR OF INFECTED MEAT.

An action was brought in Ohio to recover damages resulting from illness alleged to have been caused by the plaintiff eating pork infected with trichinella spiralis. The Ohio statutes penalised the sale of diseased, corrupted, adulterated, or unwholesome provisions when the conditions is not made known to the buyer. In this case the plaintiff, a boarder, at the request of his landlady, purchased some fresh pork and beef at a retail grocer's. The meat was ground and made into balls, fried in oil for 6 to 8 minutes, and then served. Persons, including the plaintiff, later became ill and the illness was diagnosed as trichinosis.

The trial Court directed a verdict in favour of the defendants on the grounds that the sale of the pork under the circumstances was neither negligent nor violative of the State statutes and the Court inferred negligence on the part of the landlady, as an agent of the plaintiff, for failing to cook the food properly.

Upon appeal the appellate Court reversed the judgment of the trial Court, stating: "There was substantial evidence from which the jury could have found that appellant's illness was caused by his eating pork that was infected with trichinella when sold by appellees; and, under Ohio law, the Court should have instructed the jury that if they found these facts appellees were negligent in a law *** that their negligence was the proximate cause of appellant's injury, even though another's negligence may have contributed thereto."—*M.S. CAMPBELL.—(P.H. Engg. Absts., Vol. XXI.)*

SKID ON ABANDONED TRAM TRACK.

ACCIDENT APPEAL ALLOWED.

Judgment was given on December 10th, 1942, by Lords Justices Scott, MacKinnon and Goddard in High Court of Appeal on an appeal arising out of a fatal accident in a London Borough.

Their Lordships allowed the appeal, which was brought by the father of a 16-years-old

boy against judgment given by Mr. Justice Croom-Johnson in the King's Bench Division last May in favour of the Borough Council.

The father had claimed damages in respect of the death of his son. On April 2nd, 1941, the lad was riding a bicycle when the machine skidded in the tramway lines and he was thrown to the ground and run over by a trolley-bus. The skid, it was alleged, was due to the defective or dangerous condition of the tram track for which the Borough Council was responsible. The London Passenger Transport Board, having ceased to run the trams along the track, "abandoned" it to the Borough Council, as the highway authority, on December 24th, 1938. It was not disputed that the Council became responsible for the removal of the track and the maintenance of the road.

APPEAL ALLOWED.

Mr. Justice Croom-Johnson, who found that the accident was caused through the condition of the tram track, held that the Borough Council's failure to execute with reasonable dispatch the making good of the road was a non-feasance for the consequences of which they, as a highway authority, were not liable.

Challenging Mr. Justice Croom-Johnson's decision, the father asked that the judgment in favour of the Council should be set aside and that judgment should be entered for him for £450 (an amount of damages assessed by the Judge in case his decision was held to be wrong).

The Court of Appeal decided that the Council's failure to take up the old tramway track and make up the highway with all reasonable dispatch was an act which made them liable in damages for the lad's death. The father's appeal was allowed, with costs, and judgment was entered for him for £450.

NO IMMUNITY.

Lord Justice Scott said that the London Passenger Transport Board "abandoned" the tram track in question to the Borough Council on December, 24th, 1938, and from that date until April, 1941, when the accident happened, neither the Council nor anybody else did anything to see that the track was maintained in a safe condition. It was beyond dispute that the highway was in a dangerous condition of disrepair and that that condition was the cause of the accident.

Whether the Council failed to do anything from want of thought or because they held the

view that, as a highway authority, they were immune from liability, he did not know. But that immunity only extended to the repair of the highway as such. In this case the Council had taken over from the Transport Board the tramway track which consisted of incongruous foreign matter which was no part of the highway proper and was not for highway purposes. The Council could not therefore claim immunity.

The appeal was allowed, as stated. The Council was granted leave to take the matter to the House of Lords. (*J. Inst. M. & Cy. E., Vol. LXIX, No. 7*).

A QUESTION OF TERRITORIAL JURISDICTION.

An ordinance of the city of Winters, Texas, required an inspection by the city health officer of a bakery before granting it a permit to sell its products in the city. An additional fee was charged to bakeries outside the city limits. A *habeas corpus* proceeding was brought by a bakery located in Fort Worth, which was charged with having sold bread in Winters without obtaining such permit from the health officer of Winters. The Court of criminal appeal decreed that inspection by a city health officer of bakeries outside the city limits was unauthorised, that jurisdiction of an incorporated city was ordinarily limited to its boundaries and that the city of Winters was attempting to exercise extra-territorial jurisdiction which had not been granted by the State legislature.—*M. K. HAVENS. (P. H. Engg. Absts., Vol. XX).*

PUBLIC MARKETS—RULES TO PROTECT THE HEALTH AND WELFARE OF THE PEOPLE.

"City ordinance pertaining to public market places upheld. (Florida Supreme Court; *McCroan v. Bloodworth*, Chief of Police, et., al., 193, So. 431; decided January 23, 1940). An ordinance of the city of Apalachicola provided, in section 1, for the designation, when deemed practicable, of parts of city streets as public market places for the sale of meat, fruit, vegetables, or other foodstuffs and for the allotting to each permittee of one uniform space or more as required, each space to be sufficient to accommodate one truck or automobile. The remainder of the ordinance dealt with the securing the revocation of, and fees for permits; the inspection of foodstuffs; the prohibition of the sale of unwholesome foodstuffs; and the prohibition, except as otherwise expressly provided, of the sale of foodstuffs at other than the allotted spaces.

"In *habeas corpus* proceedings the petitioner challenged the provisions of the ordinance with the exception of section 1, but the supreme Court said that it appeared that the provisions complained of were authorised by the City Charter Act and did not violate any provisions of the State constitution or statutes. The Court further stated that the provisions came within the purview of the state police power and were properly declared to be for the protection of the health and welfare of the people of the city."—*R. A. C. (P. H. Engg. Absts., Vol. XX).*

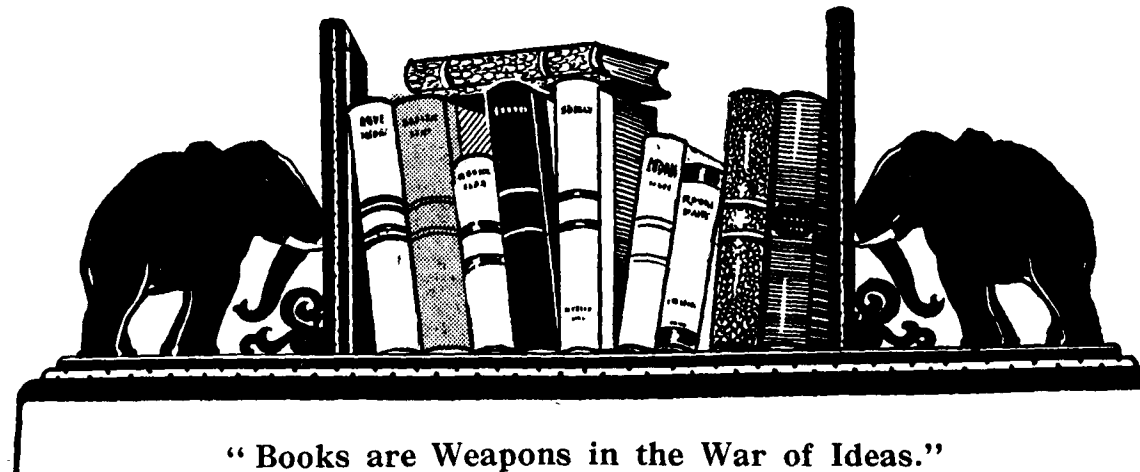
HEALTH.

Better to hunt in fields for
health unbought,
Than fee the doctor for a
nauseous draught.

The wise for cure on exercise
depend;

God never made His work for man
to mend.

(Dryden, Cymon, Epistle xiii, line 92.)



"Books are Weapons in the War of Ideas."
"Some Books are to be Tasted, others to be Swallowed and some few to be Chewed and Digested." . . . and some to be Eschewed !

MODERN HOME NURSING AND FIRST AID.

Author.—K. D. Keele, M.D., M.R.C.P.
Publishers.—Odhams Press, London.
Price.—6 Sh. 6 d.
Size.—9" X 6" *Pages* 320.

Even the most advanced countries have not been able to make enough provision by State funds or through philanthropy to see that every citizen who is ill is cared for not in the home but in a hospital meant for the purpose. This amenity is far short of the needs in a poor country like ours. In any case, a person who takes ill or meets with an accident has got to receive immediate attention at home even though he may eventually come under specialist treatment. This attention must come from friends and relatives. Hence the universal need for every intelligent person to become familiar with Home Nursing and First Aid. What is done in the early stages often means recovery or otherwise. A book which seeks to disseminate knowledge on this subject is always welcome. If it happens to be presented in a simple and easy style, as this volume does, it is doubly welcome.

Dr. Keele is the author of eight out of the twenty six chapters in the book. He is assisted, as Editor, by six other authors, who, among them, have contributed sixteen chapters, each one in his special subject. Two chapters are nominally authorless! It is a good team, well chosen from men able in their field. They have done justice to the topic assigned. It is a

popular impression that medical men tend to be pedantic and rather obscure in their writings. This production belies it. Just the most essential rudimentary facts of physiology and pathology are chosen. The chosen data are presented in simple language easily understood by the lay man. Nursing techniques and First Aid procedures are well explained and illustrated by a profusion of diagrams which are appropriate and impressive.

The book is intended for the English housewife. The upper classes in our country who have a good knowledge of the English language, and whose style of living is more or less westernised will find it useful in their home life. Although the book has no preface or an editorial note indicative of the scope and purpose of the book, the volume justifies the sub-title, namely, "Everybody's Guide to the Principles and Practice of Hygiene and Nursing in the Home." There is more of nursing than of hygiene as a whole; but the hygiene of the sick is amply covered. The absence of the year of publication or the edition of the book is perhaps indicative of the eternal nature of the subject. The volume is well got up and may be recommended as a very useful addition to any home library.

"BELL."

THE REILLY PLAN—A NEW WAY OF LIFE.

Author.—Lawrence Wolfe.
Publishers.—Nicholson and Watson, London.
Price.—6 Sh. net.
Size.—7½" X 5" *Pages* 156.

In February 1944, Sir Charles Reilly was appointed Planning Consultant by the City Council of Birkenhead to make a civic survey of the town and an outline plan for its development. He came across a lay out plan in the Borough Engineer's Office for a new satellite dormitory town on an estate of some three hundred and fifty acres which the corporation had bought in a lovely valley. He did not like the lay-out which was on ordinary suburb lines. He suggested to the Borough Engineer that they should make a new lay-out plan altogether. Sir Charles felt as a Planning Consultant that, if during his year of office, the Engineer's plan were put forward, it would be assumed by every one that he, if not responsible for it, was in agreement with it. The Borough Engineer would not accede to his suggestion. Indeed, many Municipal Engineers would not readily fall in line with a view of a Consultant! That is the tragedy of it! Sir Charles enlisted the enthusiasm of the Estate Committee for his alternative plan. Eventually the City Council did a very 'sportive and truly democratic thing,' to put it in the words of Sir Charles Reilly. The Council published both the Engineer's plan and that of the Consultant in the local press which at once created tremendous interest in the town. One would wish that in our own country that public would be given a chance of studying such and similar plans which a City Council may sponsor. We, in this country, are only accustomed to work out plans behind barred doors without giving a chance to the planned-for to study the proposals and to offer suggestions. The citizens of Birkenhead were so enthusiastic over the alternate plan of the Consultant that the communists in the city began chalking on the payments, "VOTE FOR THE REILLY PLAN." The Conservatives could not then have anything to do with it even if in their hearts, they liked the idea of the revival of the village green and village inn. The Labour Party on the other hand were behind it to a man. Party politics played a prominent part in the meeting of the City Council. Not only the local but also the National Press began to take an interest in the Birkenhead controversy. *Picture Post* published a fully illustrated article which had repercussions over the empire. Eventually, the National Labour Party at their London Conference passed a resolution blessing "the ideas for community planning shown in Prof. Sir Charles Reilly's plan for Woodchurch." That is the origin of what is now famous as the Reilly plan. The author of this book, as a student of life from the angle of the planned-for and as a

student of both mass and child psychology, has discerned, according to Sir Charles Reilly, many further advantages in what he (Sir Charles) thought was merely a natural expression of neighbourliness.

The book is undoubtedly a most important contribution to the subject of housing. In the words of *Picture Post*, "In a brief but penetrating analysis, the author makes three fundamental points:

That our way of life largely depends on the way we are housed; that the present housing system, which our planners wish to retain in a modified form, is responsible for many of the evils with which we are afflicted and that we are now in a position to eliminate those evils by reintroducing the traditional, pre-industrial revolution housing system."

Though the Reilly Plan was originally prepared for a particular site, the author shows that it has a universal validity and offers the only comprehensive and socially satisfactory solution for the housing problem, which at the moment looms large.

Again, in the words of *Picture Post* "its universality is certainly proved by the fact that various details of it have been in successful operation in Sweden, Russia and elsewhere, for a number of years."

Above all, the author demonstrates in no unmistakable terms that under the Reilly plan the provision of housing is far more rapid and far less expensive than under any other orthodox plan.

This book should be studied carefully by our Town Planning Experts in particular, who are generally following the beaten track of ordinary suburban planning without realising the importance and principles of community planning.

"TOWN PLANNING EXPERT."

SYNOPSIS OF HYGIENE.

(JAMESON AND PARKINSON.)

Author.—G. S. Parkinson.
Publishers.—J. & A. Churchill, Ltd., London.
 Eighth Edition, 1944, Price Rs. 25.
Size.—8½" X 6" *Pages* 719.

This excellent text-book emanated from London about thirty years ago under the authorship of Jameson and Marchant. In its passage through several editions, the junior author was replaced by Parkinson. It is now

the production of Parkinson, with the collaboration of Crowden in one section. The book was written by the original authors as a text book for the students of the D. P. H. Classes in London University. It conformed to the syllabus faithfully while giving succinct information on all aspects of Hygiene and Public Health which a student may need. This purpose the book continues to serve in its latest edition.

The previous edition was in 1942, and it incorporated the latest war-time knowledge at that time. It is an index of the popularity of the book that another edition was necessitated in two years. This interval saw rapid advances in health knowledge and practice stimulated by war conditions. There were also changes in health administration, and to some extent in law. All these have been included in the new edition. Infective hepatitis, experience of anti-typhoid inoculation in North Africa, yellow fever control practice, typhus inoculation experience, dehydration of food-stuffs are some of the new topics in this edition. There is a brief reference to Pencillin under Chemotherapy which itself is a recent feature. The edition perhaps came out too early for any information about D.D.T. to be included. Apart from new topics, the subjects under each section have been re-arranged to some extent in this edition.

There are no chapters in the book; there are only sections. The arrangement of sections is significant. Starting with a summary of the administrative set up, the student learns vital statistics, epidemiology, personal hygiene and health services and then passes on to Environmental Sanitation. Old text books set up a tradition of treating the subjects in the reverse order. The fact that Environmental Hygiene is now the domain of the Public Health Engineer, and that the medical personnel is more concerned with disease control and personal health, is well brought out in this. The arrangement is significant and gives the right perspective on public health. More than a fifth of the book is taken up by a concise summary of the public health legislation in England.

The lapse of two years should necessitate yet another edition. Several new war developments are of importance to the health worker. More significant are the almost revolutionary changes in the outlook on health and the greater

emphasis on social medicine, positive health maintenance and disease prevention. The curriculum for public health training is undergoing thorough revision. An excellent text book like this, is bound to be fully re-edited in conformity with this development. We may then hope to see an elaboration of the epidemiology and prevention of communicable diseases, an account of the field preventive work possible in the case of non-communicable diseases, more stress on the relation to disease of every environmental condition, and less of legal knowledge which any way one has to acquire in practice. It is certain that the able and watchful author and his collaborators will fulfill this anticipation ere long.

Bureaucracy in India sets a very high value on English training. It seems English Universities and examining bodies as the acme of education and the Mecca of the student. To perpetuate this in the Indian minds, Governments have been gone to the length of insisting on a British Diploma or Degree in Public Health as a qualification for service, preference and promotion. An Indian Health Worker who is trained on the basis of this work is bound to be ill-equipped for his task, as many of the diseases and problems peculiar to this country receive scant notice. If this tradition is to persist—which we hope not—English authors would do well to remember that they have to cater to “Imperial” needs also.

“BELL.”

“PROGRESS.”

A MONTHLY

EDITED BY THAYYIL K. VASUDEVAN,
TRIVANDRUM.

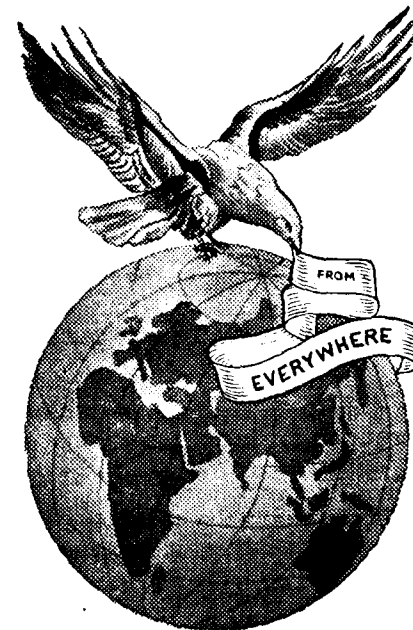
(Annual Subscription Rs. 8.)

Single copy Annas 12.

Volume I, No. 2.

With articles from a number of Indian and foreign writers including Bernard Shaw, R. L. Megroz, Upton Sinclair, Lionel Curtis, Professor A. M. Low and W. N. Ewer, this substantial and variegated and sumptuously got-up magazine bids fair to take its place in the top rank of Indian journals. There is something here to suit every taste, both in the letterpress and the illustrations.

K. S.



WHAT DO THEY SAY ABOUT IT?

Readers can contribute to this section. They are requested to send extracts of current literature which, in their view, would interest the people.

—Ed.

INDUSTRIAL HYGIENE & SANITATION.

PRINCIPLES OF VENTILATION BY WALL AND MONITOR WINDOWS.

The article deals with natural forces, temperature differences, wind, and methods for using them in natural ventilation. The following suggestions are offered for consideration in the design of buildings:

(1) If the building is rectangular in shape, have the long side perpendicular to the direction of the prevailing wind.

(2) Place heat processes at the windward end or side. If this is impossible to do, have them under a portion of the building that is higher than the rest.

(3) Provide inlet and outlet openings of equal area. Since it is usually advisable to have windward monitor windows closed, the total roof openings provided for should be greater than the total in the sidewalls.

(4) Window openings, both sidewall and roof, should face more than one direction, preferably all four.

(5) When the heat is present, the inlets should be low and the outlets as high as possible. Mid-height openings are of little benefit. If all openings are at one level, no flow will be caused by heat head.

(6) Buildings housing heat processes, such as foundry work or forging, will require con-

siderably more air than assembly plants or machine shops.

(7) Air movement, created by natural means, is directly proportional to the amount or size of the window openings provided.

(8) Both inlets and outlets must be provided as air will not flow out unless air to replace it can get in and *vice versa*.

(9) Window openings on the windward side should not be obstructed by other buildings or sign boards, outside, nor by partitions, inside: HOWARD D. SCHMIDT. (*E. W. Canover, Engin., News-Rec.*, 127, 176-78, July 31, 1941. (From “*P. H. Engg. Absts.*”, Vol. XXI).

VENTILATION AND ATMOSPHERIC POLLUTION.

PART I.

SUGGESTED STANDARDS.

Certain fundamental standards were adopted by the American Public Health Association in 1935, establishing the optimum in space ventilation for the maintenance of comfort, health and efficiency among occupants. Some of the proven facts recognized by these so-called “working standards” are: That sharp contrasts between inside and outside atmospheres should be avoided; that air should be dry rather than damp the year round; that permissible air movements are limited by

temperature and other factors; that noisy air handling equipment is objectionable; that individual space and air requirements are functions of type of occupancy and space use; and that obnoxious dusts, bacteria, fumes, vapours, and gases should be reduced to their substandard thresholds. The great strides made in air conditioning and industrial hygiene in recent years have served to better qualify these standards rather than destroy their validity: WILLIAM P. BATTISTA.—*C. P. Taglou, Amer. Pub. Health Assn., Year Book, 115-17 (1940-41.) From "P. H. Engg. Absts.," Vol. XXI.*

DUST DISEASES IN RUSSIA.

This is a review of a series of papers covering the clinical, environmental and experimental aspects of research on dust diseases, mostly among coal miners, done by the Donet Institute for Labour, Hygiene and Occupational Diseases. This Ukrainian research resembles that of the British Medical Research Council's investigation in South Wales both in plan and findings. There is the same distribution of pneumoconiosis between the soft coal and anthracite fields (no other data given), with the latter suffering far more heavily, and the same surprising lack of any special tendency to tuberculosis among miners.

Contrary to the general view held in England and America that silicotic nodules result from the presence of silica in coal, and that coal dust itself acts chiefly as a diluent, but in accord with the Australian claim that coal dust itself cannot be disregarded as a factor on producing nodules, two of the Russian investigators, V. A. Ravvin and P. A. Eniakov, claim to have evidence that coal dust (and not its mineral admixtures) is the basic factor which determines the changes in the lungs in occupational anthracosis.

The pneumatic drill is blamed as the chief dust producer. Wet boring, good ventilation, and correct handling of explosives are recommended for dust suppression. Electrolytes and naphtha and resin soaps are found to increase the dust settling powers of water sprays, which are recommended for dust control.

The public health measures in the Russian mines, as reported, were excellent, and far superior to those available elsewhere. They included pre-employment and periodic physical examinations controlling job placement and transfer. Constant medical and sanitary services, hot and cold showers, and facilities for drying and changing clothing were provided

at all collieries. Workers were supplied with special garments for mining, and did not return to their homes in the clothes worn on their working shift. They were given a free allowance of milk daily, a month's vacation every year, and were liberally treated with regard to hospital care, insurance, and pensions: RICHARD T. PAGE.—*Lancet*, 242, 85, January, 17, 1942.—*See P. H. E. A., June 1942.*—(From "*P. H. Engg. Absts.*," Vol. XXII, August, 1942, Page 50.)

INDUSTRIAL HYGIENE & SANITATION.

HEALTH HAZARDS IN STEEL MILLS.

The author conducts the reader on an industrial-hygiene survey of steel mill operation. Step by step, the various operations with their associated raw materials and by-products are outlined, and the industrial hygiene problems are pointed out. Numerous examples of toxic concentrations of various materials found to exist in steel manufacture and fabrication are described in relation to points where they occur: R. M. BROWN.—*J. W. Fehnel, Indus. Med.* 7, 358-60, July, 1942. (From "*P. H. Engg. Absts.*," Vol. XXII, September 1942, page 60.)

ENGINEERING SERVICES IN INDUSTRY OTHER THAN CONTROL OF OCCUPATIONAL DISEASES.

The importance of the engineer in maintaining the health of industrial workers in other fields besides the well-recognized duties of safety engineering and the engineering control of occupational disease hazards is recalled to our attention. Matters related to the health of industrial employees such as illumination; glare; noise; vibration; safety of water supply; the temperature, humidity and movement of air; smoke; housing; recreational facilities; and city planning are largely engineering in nature. These problems and the means by which the engineer can help to eliminate them are discussed: R. T. PAGE.—*Joel I. Connolly, Amer. Jour. of P. H.* 31, 21-26, Jan. 1941. (From "*P. H. Engg. Absts.*," Vol. XXI, May 1941, page 22.)

NOISE AND VIBRATION CONTROL.

A short description is given of various industries with noises and vibrations characteristic of each. Distribution of noises within the particular industry is also noted.

It has been observed that while noises act by intensity, pitch and tone, the most intense are the most injurious. Some authorities, however, consider pitch to be the important

element. Pitch is more difficult to estimate than intensity. Tone in combination with pitch characterizes certain noises.

In addition to the above, other harmful factors have been observed. These are rhythm, reflection and the effect of vibration when accompanying noise. Noises varying in intensity are more harmful than constant sounds.

Noise abatement methods are listed, among which are:

- (1) Proper construction of machine foundations.
- (2) Location of the industry.
- (3) Insulating buildings.
- (4) Proper design of grills and ventilation ports.

The report of the Bureau of Standards is cited in which it was found that absorption of sound by certain materials varies with frequency. The proportion is not a direct relationship in all cases.

Vibration can be minimized by:

- (1) Proper selection of location with regard to soil conditions.
- (2) Location of machine relative to supporting beams. Proper analysis of direction of impacts is of great importance.
- (3) Antivibration equipment.
- (4) Protection of workmen by use of soft-sole boots, straw mats, etc.

All of the foregoing considerations should be accompanied by:

- (1) Medical examination at time of employment.
- (2) Periodic medical examinations.
- (3) Variegation of work of the employee from time to time.
- (4) Use of ear protectors.: A. E. WILLIAMSON.—*G. H. Ferguson, Canad. P. H. Jour.* 21, 613-618, Dec. 1940. (From "*P. H. Engg. Absts.*," Vol. XXI, page 26.)

PERSONAL FACILITIES.

Adequate facilities for the personal convenience of industrial workers are important. Cleanliness, ventilation and accessibility are the 3 prime essentials for all personal convenience facilities in the industrial plant. Continuous work schedules and shorter lunch periods make it essential for the provision of eating facilities. Double and triple shifts make it advisable to provide recreational facilities.

Proper attention to adequate facilities will not only repay employers in the overtime defence industries but will also prove a sound investment for all plants: WILLIAM FRANKLIN. *F. W. Maynard, Chem. & Met. Eng.*, 48, 108-110 May, 1941. (From "*P. H. Engg. Absts.*," Vol. XXI, page 46.)

THE INDUSTRIAL HYGIENE ENGINEER.

The lack of trained industrial hygiene engineers is discussed, and several situations in which occupational diseases of serious consequence resulted, in industries where an industrial hygiene engineer was not available, are cited. Industrial hygiene engineering personnel have been developed in State health and labour departments, and in industry, largely during the last decade. The role which the industrial hygiene engineer should play in various industrial procedures is emphasized.

Training facilities for industrial hygienists are enumerated, and the need for additional educational facilities for this profession is stressed. The great need during the present emergency is for a large increase in industrial hygiene engineering personnel. After the emergency is over, the greatly increased number of industrial health engineers will still be needed, since in many cases they will be absorbed into various other correlated fields: R. M. BROWN.—*W. A. Cook, Ind. Med.* 10, 196-200, May, 1941. (From "*P. H. Engg. Absts.*," Vol. XXI, August 1941, page 46.)

RENAISSANCE OF INDUSTRIAL HYGIENE.

Changes have occurred that have modified the employer's motive for furnishing health-maintenance programmes and also have modified the attitude of the general medical profession toward these programmes and the physicians and allied professions participating in them. Originally the medical service was emergent in nature for the treatment of injuries. Through compensation acts industrial surgery has evolved into industrial hygiene with the object of assisting workmen to avoid the disabilities of sickness as well as the disabilities of occupation.

Managements realize the value of the contributions of a good industrial health service. Industrial hygiene engineers have proved their worth in protecting workers against occupational diseases and this has brought about a wholesome rivalry with the medical profession for leadership. The public health viewpoint has influenced the trends in industrial medical

departments in disease prevention. There has been created a council on Industrial Health in the American Medical Association.

The health of workers who produce munitions for national defence must not be overlooked, because their ability to produce rests largely on their conditions of health. The programme of the Division of Industrial Hygiene of the National Institute of Health to maintain health in the industries essential to national defence is reviewed. It "recognizes the soundness of the industrial health maintenance programme which has evolved out of the experience of recent years and seeks only to strengthen it in those respects found necessary to national defence purposes." It stresses the importance of securing co-operation from all Federal, State and local departments and volunteer organizations. It describes plans for training necessary personnel for industrial service, depending upon their previous preparation.—JAMES H. LE VAN.—*C. D. Selby, American Journal of Public Health*, 30, 1422-1426, December, 1940. (From "P. H. Engg. Absts.", Vol. XXI, January, 1941, Page 1).

ENGINEERING HEALTH SERVICES FOR SMALL PLANTS.

The need for engineering service in small plants, which are arbitrarily defined as those with less than 100 employees, is most important, since 90 per cent. of all the manufacturing and mechanical industrial establishments employ less than 100 workers. Though the need for help in the small plant with its health problems is great, it is extremely difficult since the typical health and safety set up is composed of a physician on call, who rarely sees the plant operations, no nursing service, and someone assigned to first aid, whose supplies are limited to a first-aid kit. There are at present 203,000 such manufacturing plants in the United States employing about 8,800,000 workers, or an average of 43 employees per plant.

Unlike the physician or the nurse, the public health engineer is already in industry and can meet the technical personnel of these small plants on an even basis. Therefore, in addition to the excellent opportunity afforded for the control of the occupational environment, the engineer can do much to overcome, first, the prejudices which exist in the minds of small plant management against regulatory agencies, and, second, he is in an excellent position to render complete engineering health service to industry, thereby erasing the old conception

of industrial hygiene, namely that it is merely occupational disease control.

Personal contact and sound engineering practice and advice are the keynotes in the solution of the small plant problem. More time must be spent on them, and methods of control learned in the larger plants must be adapted for use in the smaller ones. OSCAR J. SOBOLE.—*John Buxell, Amer. Jour. Pub. Health*, 32, 853-59 Aug., 1942. (From "P. H. Engg. Absts.", Vol. XXIV, page, 5.)

THE ROLE OF THE ENGINEER IN AIR SANITATION. A SYMPOSIUM.

Theodore Hatch mentioned that many of the approach procedures, also detailed techniques used in studies and control of industrial health hazards were largely developed by Mr. Bloomfield and associates in the U. S. P. H. S. It was pointed out that the "engineering approach" to certain industrial hygiene problems had brought about valuable progress in the absence of definite standards of concentration limits. For example, mine dust surveys identified certain dust concentrations with the best known practices in dust control: which concentrations were then adopted as a "figure of merit" or criterion for all mines. There followed progressively a decrease in dustiness and a correspondingly lower silicosis incidence. *Industrial hygiene is a relatively new but vitally important science requiring close co-operation between the physician and the engineer.*

Donald Francis Griffin discussed the possibilities of transmitting intestinal illnesses by atmospheric pollution resulting from wind and wave action upon sewage polluted waters, whereby even shortlived pathogens might cause infection via air-wafted droplets.

Gordon M. Fair suggested three additions to the factors in air sanitation included in Professor Phelps's survey:

- (1) The control of odors.
- (2) The conditioning of air under abnormal pressures.
- (3) The modification of the illumination of enclosed spaces.

Sanitation requires knowledge from various branches of engineering and although few men can hope to maintain effective intellectual and practical contacts with diverse branches of sanitary engineering, such as, for example, water sanitation and air sanitation, it is hoped that the engineering groups engaged in the various specialized branches of sanitation will be bound

together as sanitary engineers by their mutual objectives; protection and promotion of public health.

H. G. Dyktor stressed the extent to which engineers in industry can co-operate with the industrial hygienist without requiring the specialized knowledge and experience of the latter. Co-operation from plant officials is needed on the following three items considered basic to all plants:

(a) Housekeeping; including regular and routine cleaning of floors, windows, light bulbs, etc.

(b) General Sanitation; including safe water supply, proper sewage disposal, approved drinking water dispensers, satisfactory toilets, wash rooms, and adequate plant illumination and ventilation.

(c) Maintenance of Protective Equipment; such as hoods, ducts and dust collectors, respirator filters, positive pressure helmets, etc., which need regular inspection.

Attention to the above by the average plant engineer would relieve the industrial hygienist of routine thereby permitting him to focus his specialized knowledge upon special problems. HARL D. GROSS.—*Theodore Hatch, et al. Proceedings, American Society of Civil Engineers*, Vol., 66, No. 2, Feb. 1940, Pages 363-370. (From "P. H. Engg. Absts.", Vol. XX, September, 1940, Page 30.)

INDUSTRIAL HYGIENE.

As a background for those interested in industrial hygiene in a non-technical manner the author has concisely defined the subject and given the highlights from the ancient Egyptian interpretation to the passage of a Workman's Compensation Act in Victoria in 1935. He has likewise briefly enumerated important developments in educational facilities afforded to those who wish technical training in this field.

Following this approach the author classified industrial diseases according to their cause into:

- (1) Those due to bacteria, or parasites.
- (2) Those due to the inhalation of fumes, gases and vapors.
- (3) Those due to dusts.
- (4) Diseases due to radiation.
- (5) Abnormal physical conditions.
- (6) Overwork.
- (7) Skin contact with harmful substances.

To emphasize the magnitude of the problem he states that in the United States and Great

Britain, a larger percentage of fatalities is due to occupational illness than to accidents. He recommends certain guiding principles in the organization of industrial-hygiene work, cites some achievements, and briefly discusses such important occupational diseases as silicosis, asbestosis, and poisoning from benzene, carbon tetrachloride, and the oxides of nitrogen. G. H. HAZELHURST.—*D. O. Shiels, Health Bulletin, Dept. of Public Health, Australia*, Nos. 59 and 60, July-December, 1939, Pages 1631-1641. (From "P. H. Engg. Absts.", Vol. XX, October, 1940, Page 33).

BASIC PRINCIPLES OF INDUSTRIAL SANITATION.

This article is written to indicate the qualifications of sanitary engineers in the field of industrial hygiene. With the possible exception of sampling and control of air contaminants, the training of sanitary engineers is shown to be sufficiently broad to include all other phases of industrial hygiene investigations. Unfortunately, however, sanitary engineers have failed to interest themselves in industrial hygiene, and even today few universities recognise the fact that it is an integral part of the sanitary engineering curricula.

In addition to the above discussion, the article lists in detail the essential requirements or principles of industrial sanitation. General sanitation includes; water supply, toilet facilities, washing facilities, person services, and house-keeping. Environmental control comprises; space needs, temperature control, ventilation requirements, and lighting requirements. Engineering control deals with personal protection, control of dusts, fumes, vapors, and gases, and sampling of air-borne contaminants. In addition, there are included details on keeping of records and posting of notices. J. M. DALLA VALLE.—*J. M. Dalla Valle and R. R. Jones, Amer. Jour. of Public Health and the Nation's Health*, Vol. 30, No. 4, April 1940, Pages 369-384. (From "P. H. Engg. Absts.", Vol. XX, September, 1940, Page 28).

MEDICAL ENGINEERING CONTROL OF INDUSTRIAL HEALTH HAZARDS.

The control of industrial health hazards lies primarily in the hands of the physician and engineer. The physician, working in conjunction with the engineer who understands the various processes is in a position to diagnose any disease which may be suspected of having an industrial origin. The engineer with a

medical association will have a clearer understanding of what conditions may constitute a health hazard. The engineer should study conditions which may be detrimental to health and by quantitative measurements determine the dosage of substances that workers receive. In conjunction with the findings of the physician safe practices may eventually be determined for any occupation. The present article discusses the roles of the physician and engineer in the control of industrial health hazards and cites the various methods for such control, discussing briefly the training and education necessary for industrial hygiene workers. In addition, the article stresses the medical-engineering control as an important factor in future practices and in future legislation. J. J. BLOOMFIELD.—*T. Lyle Hazlett, Industrial Medicine, Vol. 5, May, 1936, Page 232. (From "P. H. Engg. Absts.", Vol. XVII, June 5, 1937, Page 11).*

PROGRESS IN INDUSTRIAL SANITATION WITH SPECIAL REFERENCE TO THE CONTROL OF INDUSTRIAL DUST.

Occupational diseases are controlled by maintaining healthful working conditions. The maintenance of such conditions is primarily an engineering problem, but co-operation by the various other professions, such as medicine, chemistry and bacteriology, is essential for a complete industrial health service. By correlating the results of clinical studies of workers with years of exposure, morbidity and mortality, experience of the workers, with the findings on environmental conditions, it is often possible, to estimate the maximum permissible safe concentrations of harmful substances. With such data at hand, the engineer is in a position to efficiently control hazards to health. However, to date there has been a lack of basic information, both from the clinical as well as the engineering viewpoint. Perhaps it is because of the absence of basic standards that very little has been accomplished in the study of the efficiency of such measures as may have been installed. Recent trends in placing the responsibility for occupational diseases upon the employer has been a stimulus for the design of control equipment on a more scientific basis.

The present article outlines the expressed herewith and discusses in some the control of the industrial dust hazard. an engineering viewpoint, consideration be given to three aspects of this problem: measurement of dust concentration, the selection of dust control programme, the permissible dust concentration, and the selection of basic methods of design.

These three subjects are treated in detail, in this article, which closes specifications for the design of local exhaust systems. J. J. BLOOMFIELD.—*The American Journal of Public Health, Vol. 27, July 1937, Pages 671-679. (From "P. H. Engg. Absts.", Vol. XVIII, January 15, 1938, Page 1).*

CONTROL OF OCCUPATIONAL ENVIRONMENT THROUGH SANITATION CODE REGULATION

"Attention is again called to the enforcement of Regulation 280 of the State Code which requires that 'before any firm, corporation, or other employer undertake any actual construction or reconstruction therewith, the State Department of Health shall be notified of any change, replacement, extension, or new installation of any industrial exhaust ventilating system for the removal of dust, fumes, vapors or gases which may affect the health of the workers.'"

"Since the announcement of this regulation in the July Health Bulletin, we have been notified of a number of major violations and a variety of changes in industrial ventilation systems. These notifications have been brought to our attention by health officers and consulting engineers, and have enabled us to suggest any necessary corrections before actual changes or construction work was started. Although most of the plans submitted have been minor changes, they would have required appreciable expenditure if changed after installation complete and the system was then found to be ineffective." R. E. TARBETT.—*Connecticut Health Bulletin, Vol. 53, No. 1, January 1938. (From "P. H. Engg. Absts.", Vol. XIX, April 22, 1938, Page 5).*

