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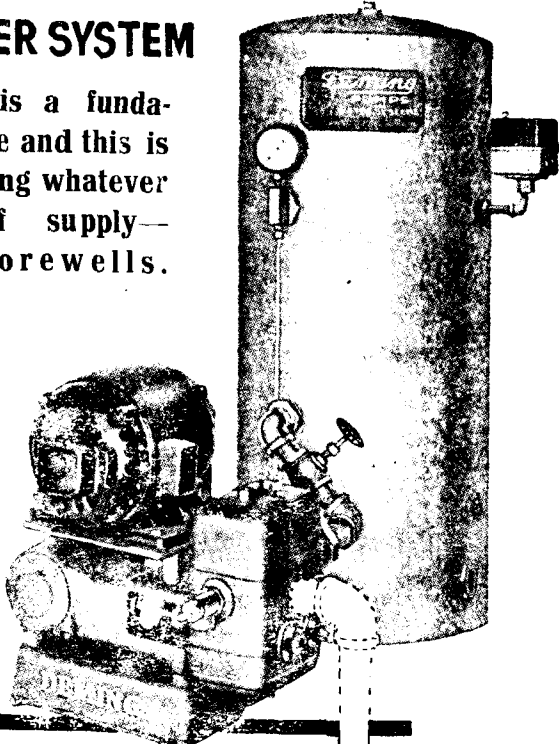


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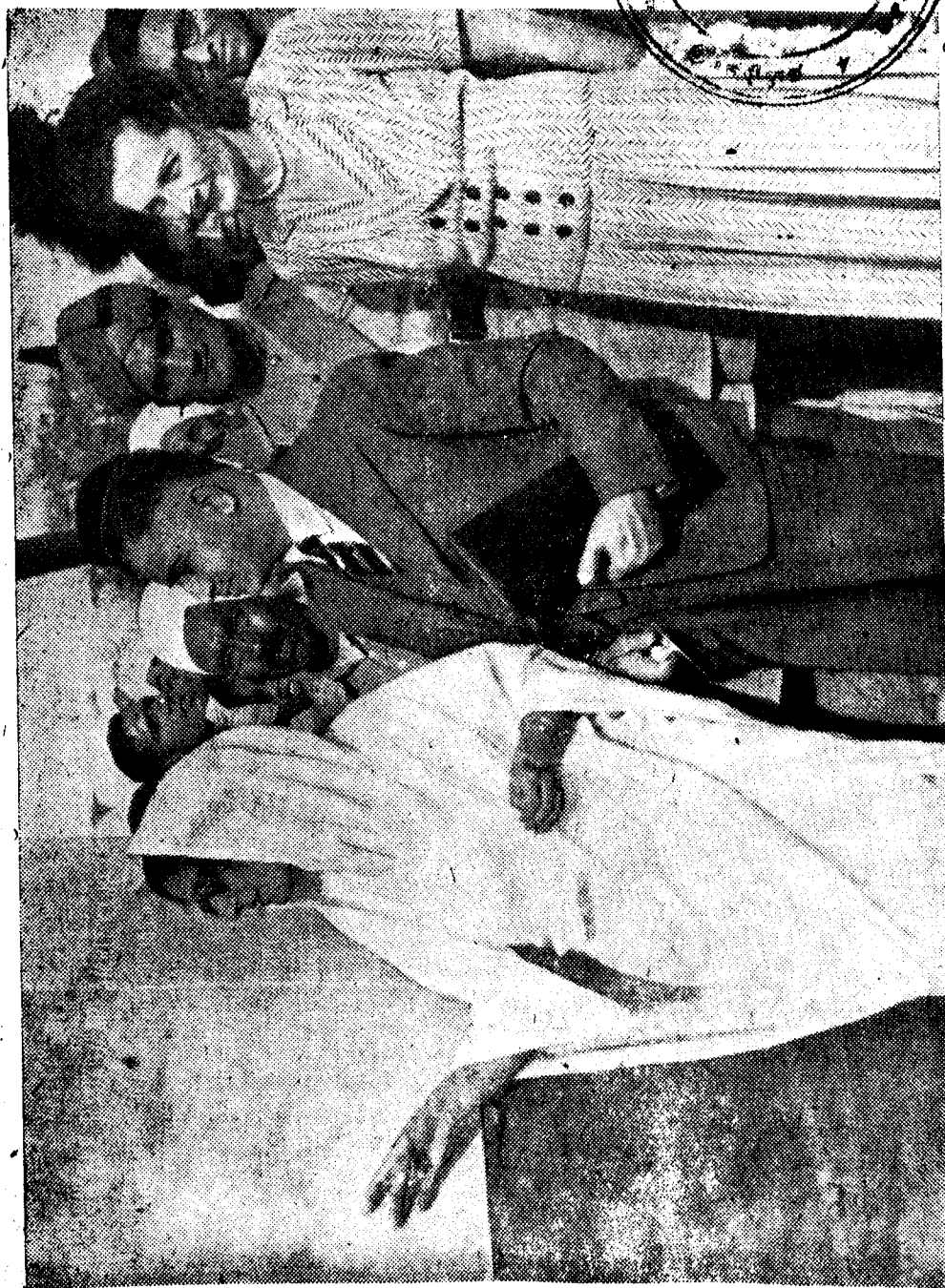
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The Primary Health Centre at Najafgarh. Hon. Rajkumari Amrit Kaur, India's Health Minister, lays foundation. Lady Mountbatton and Col. Barkat Narain, Director of Health Services, Delhi Province, also appear in the picture.



VOL. III No. 6

MARCH, 1949

ISSUED MONTHLY

EDITORIAL . . .

Where is the liquor which God, the Eternal brews for all His children?

OUR WATER SUPPLIES MADRAS CITY WATER SUPPLY

Sri C. Narasimham, Commissioner, Corporation of Madras, in a broadcast talk which we publish elsewhere in this issue, has reviewed the situation and appealed to the citizens of Madras to cooperate with the Corporation in conserving what little storage of water is available at the source. Every citizen should realise his own responsibility in the matter. He should not only reduce the consumption of water to the absolute minimum but also keep a vigilant watch over the wastage of water in his premises. He should prominently bear in mind that wastage of water in his own house amounts to a denial of drinking water to his neighbour.

UTILISATION OF WELLS

It is said that there are about fourteen thousand wells in the City and of

these, about six thousand *may* yield potable water. It is further reported that a little over 11,900 wells, public and private, have been cleaned and chlorinated. From a public health point of view, it is not enough if these wells are cleaned and chlorinated but once.

The water in the wells is liable to get contaminated unless effective steps are taken to prevent the drawing of water from them with pots and ropes. Multiplicity of the sources of drinking water-supply to a community has been always a headache to water authorities. Every public well should be chlorinated *at least* once a day, so as to leave always a trace of chlorine in the water. Private individuals should be instructed clearly as to how their wells should be chlorinated. They should be made to accep

owners are still so eager to make profit that they would readily cast aside legal interferences where there is no effective factory inspection. Hence, the need for special government service to prevent, or at least to alleviate, industrial accidents and diseases and to promote worker's welfare.

India, like Japan, ranks among the eight States of chief industrial importance, and as such, is allotted a permanent seat on the Governing Body of the International Labour Office. India is becoming a country of great industrial importance and still greater potentialities. Her organised industries, like Tea plantations, Cotton spinning and Weaving Mills, Jute Mills, Collieries, Railway Workshops, Cotton-ginning and pressing works and metal and engineering workshops, employ over 3 million people. In addition, there is a very large number of small factories and workshops employing many millions, which, from a social point of view, represent a special problem.

It is, therefore, important to estimate how far the standards of protection which have been embodied in the Conventions of the International Labour Organisation have been and can be applied as also the Recommendations of the Royal Commission on Labour in India. There is the general feeling that most of these things cannot be done by legislation alone. They depend mainly upon the desire for betterment among the people themselves and the recognition of its necessity by educated public opinion. Neither of these conditions existed, but both are now being gradually realised.

OBJECT OF NOTIFICATION

The purpose of the notification of industrial diseases is manifold:—

- (a) To evaluate the dangers of different industrial processes and of different materials and elements employed in manufacture. These can be mitigated by expert medical advice and research.

- (b) From the returns of cases reported and investigated, annual statistics can be compiled.
- (c) Preventive measures can be devised and recommended.
- (d) Regulations can be made to protect the health of the work-people.
- (e) Notification forms the ground-work on which many industrial poisons can be stopped from use.

The notification of notifiable industrial diseases in Great Britain has been a slow development. Cases of lead poisoning, phosphorous, arsenic and anthrax were required to be reported in 1895. Mercury poisoning in 1899, Toxic Jaundice in 1915, Chrome ulceration and epitheliomatous ulceration in 1920, carbon di-sulphide, aniline and chrome benzene poisoning in 1925, and manganese poisoning in 1937. Cases of industrial silicosis, asbestosis, dermatitis are notifiable voluntarily.

The Indian Workmen's Compensation Act, 1923, in Section 3 (2), has specified a number of occupational diseases peculiar to employment which are compensable. This list includes diseases which are either a risk of a particular occupation, not common to all persons or are those which can, with reasonable certainty, be attributed in particular cases to the nature of the employment. It is estimated that there are about 2,000 diseases which can, to some extent, be attributed to a person's occupation and in Schedule III of the Workmen's Compensation Act, 1923, a dozen such diseases are listed.

LAW AND OCCUPATIONAL DISEASES

The first consideration entering into the adoption of an occupational disease law relates to a choice between a scheduled type of coverage and full coverage. The first named heading implies an enumeration by name of the various occupational diseases arising from hazards of occupation. The listing of the disease in an

Act is presumably based upon the prevalence of the disease from the standpoint of its existence as an occupational hazard. The occurrence within industry of an occupational disease suggests a remedy for the relief of those injuriously affected. The scope of the diseases listed is likely to be limited to those presenting the greater frequency and severity rates. The Legislative enactments scheduling these diseases reflect the experience of the State in the prevalent occupational disease hazards.

Unfortunately, the above argument is not borne out by any statistical data or circumstantial evidence. The diseases compensated in any part of India since the promulgation of the Act in 1923 are barely handful. The reason is not far to seek. The law makes provision for compensation. There are existing patients by thousands with compensable diseases. Then, where is the snag? One can only say that the administrative machinery for enforcing the law is not in existence. The matter of legislative policy relating to the extent of coverage is an important one. The coverage of diseases of frequent occurrence in contrast to the omission of those of less frequency leads to illogical and inequitable results. An example will illustrate this argument. In Mysore Gold Mines, prior to the Mysore Silicosis Rules of 1940 framed under the Mysore Workmen's Compensation Act of 1928, no cases of silicosis were reported, but soon after that, 402 cases in the first year, 644 in the second year and 788 cases in the third year were reported.

While our schedule of diseases is a comprehensive one it does not anticipate the appearance of diseases out of the ordinary, or contemplate the appearance of other diseases from varied industrial diseases. The reason is not far to seek. There is a deplorable lack of scientific enquiry into the prevalence of occupational diseases in various industries and secondly there is no compulsory notification of occupational diseases forthcoming

either from the employers or the medical personnel.

No schedule is fool-proof, nor designed to cover all occupational diseases. They cover the usual and expected ones, not the unusual or extraordinary ones.

In full coverage complete protection is provided to the worker from all occupational diseases resulting from the hazards of employment. There rests upon the administrator greater responsibility in fact-finding in the interpretation of an Act of this character. We, in this country, are not as yet so advanced to provide for full coverage.

In trying to seek, now, the causes of this lack of data regarding the prevalence, severity, and frequency of these occupational diseases, one is struck by the absence of compulsory notification in the existing legislation, both labour and public health, on the part of the "occupier" of the factory and the general body of private practitioners in this country.

Section 89 of the Factories Act, 1948, lays down for the first time the principle of compulsory notification and sub-section 4 of Section 89 lays down a penalty of Rupees fifty for non-compliance with this provision of the Act. It also lays down that, where the report of the medical practitioner as required under sub-section 2 of Section 89 is confirmed to the satisfaction of the Chief Inspector, by the certificate of a Certifying Surgeon or otherwise, the medical practitioner will be entitled to a certain fee for notification as laid down in the Rules under this Act.

In order now that the purpose of the Act be enforced, it is necessary that—

- (a) all Factory inspectors,
- (b) all Certifying Surgeons,
- (c) all civilian general medical practitioners,
- (d) all factory doctors and
- (e) all such persons who report the occurrence of a notifiable disease in a worker.

should be made aware of the existence of this section of the Factories Act.

KNOWLEDGE OF NOTIFIABLE DISEASES

Taking individual categories, it is of paramount importance that all factory inspectors must have a workable knowledge of notifiable diseases, their signs and symptoms, their causation and the remedial measures for their abolition. It is therefore of extreme importance and urgency that the question of the instruction of these inspectors be undertaken early in hand. Courses or Junior and Senior Inspectors should include instruction on industrial toxicology, occupational diseases, and industrial hygiene methods. Whether the courses are run on Provincial basis or Central basis, the fact which must be emphasised is that all inspectors must be made conversant with such problems in industry and their knowledge kept up-to-date by short revision or refresher courses. Another point worthy of note is that such a course should be a statutory inclusion in the training of our factory inspectors. It may also be pointed out that later on in years to come it may be possible to draw on the resources of the society of Industrial Medical Officers, to volunteer such help in the running of courses.

Coming now to the Certifying Surgeons, they form an important link in the development of industrial hygiene methods between the Factory Inspector and the large body of workers employed in processes covered by rules relating to Dangerous Operations. Owing to the fact that the Certifying Surgeon combines in himself the duties of a physician and also the knowledge of the working environments of the worker whom he examines, he is an essential officer to help in the investigation of a majority of notifiable industrial diseases. It is, therefore, incumbent on him to have a knowledge of toxicology of industrial poisons and the prevalence of occupational diseases in industries on his medical charge.

In the selection of Certifying Surgeons, it is therefore, important to select those who have a combination of these two qualities. It is also necessary that the Certifying Surgeons are kept periodically informed of the requirements of modern Industrial Hygiene practices.

The present body of Certifying Surgeons has officers of such high rank in the profession as Civil Surgeons or Assistant Directors of Public Health, that they cannot afford to give the necessary time to routine work of this nature. Alternatively the services of the general medical practitioner could be utilised on a part-time or full-time basis to relieve or replace the Certifying Surgeon and carry out the duties of reporting to the Inspectors on serious accidents and cases of industrial disease, to certify children and young persons as fit for work and to examine periodically the persons employed in certain dangerous trades.

These Certifying Surgeons are not paid for the reports on accidents or for the certificates of fitness either by the Provincial Government or the employer as is the case in United Kingdom.

From its very inception, the code of factory legislation, so far as the regulation of the working hours of children and young people are concerned, had been obliged to grapple with a problem of formidable dimensions, for, in the absence of any provision for the compulsory registration of births, reliable evidence as to the age of any particular individual was frequently unobtainable. The accurate determination of age is an integral factor in the regulation of juvenile labour and the Act of 1948 makes a real advance in looking to the Surgeons to establish the age of the child as a matter of fact rather than of surmise.

The Certifying Surgeons have been called in not because there is any idea that they could make a contribution to problems of health and safety, but because their services were essential in ascertaining age. Their functions are now extended—they are required to vouch for the

physical fitness of the young workers and to acquaint themselves with the dangers of the various processes and dangerous operations carried on in industry, to be able to look out for and report to the Chief Inspector any points of interest bearing on the health of the workers in the factories in their districts. This serves to identify them more closely with industry.

THE FACTORY DOCTOR

The unhealthy conditions encountered in many of the factories are a cause of grave concern to the Factory Inspectors. The heavy incidence of epidemic diseases, especially in large towns, has convinced all that steps must be taken to deal with the appalling sanitary conditions, that are the prime focus of infection. Many problems in connection with factory administration require medical knowledge—this need is growing with the increase in industrial development in the country. In the Report of the Royal Commission on Labour in India, 1931, it was recommended that "an officer with medical qualifications should be appointed as an Inspector of Factories in every Province, part or full-time according to the requirements of the Province. Certifying Surgeons should be empowered as Inspectors."

In Provinces which are chief industrial centres there is ample work to justify the appointment of such medical inspectors as a part of the Provincial Inspectorate staff. Though these officers will be required to undertake work which up till now has been left largely undone, still their work will be of substantial assistance to the Inspectorate.

The present-day medical officer in industry is doing a general practitioner's job, and has dealt with general curative medicine. Even the provincial health departments have not progressed much in public health preventive service. Industrial hygiene and industrial diseases as such have not come in the purview of such departments, due to the lack of Assistant Directors of Public

Health who have a special knowledge of these subjects and are capable of advising industrial employers on matters affecting the health of their workers and carrying out special investigations in the industrial field. Secondly, little work has so far been done in India in this branch of preventive medicine. The Industrial Health Advisory Committee constituted under the Indian Research Fund Association has started certain investigations on this subject. But more is needed.

On the question of prevalence of industrial diseases, the available statistics can throw no light. While it cannot be denied that diseases associated with industry are non-existent in India, their non-detection is due to the fact that either they are never seen by a medical man or, if seen, pass unrecognised and undetected. This leads to the wider question of the medical education of our doctors.

The Workmen's Compensation Act has been in force since 1923, and in it is scheduled a list of compensable industrial diseases. This Act is of use from the preventive side, as it, not infrequently, brings to light, conditions whose causation and prevention require investigation. In the working of the Workmen's Compensation Act in the various Provinces, one is astounded by the absence of any compensation claim paid due to a compensable disease. On this question, the Royal Commission in 1931 observed, "while recognising that compulsory notification of Industrial disease is the best method, we consider that the time for its introduction in India has not yet arrived" A period of 17 years has elapsed and in the statistics of our industrial diseases we are as we were in 1931.

The Factories Act, 1948, has for the first time attempted to include in Section 89 compulsory notification of certain industrial diseases and it will be some time before we can be made aware of the frequency and severity of these preventable diseases in our industry. This section of

the Act deserves a wider publicity amongst the ranks of the big body of general practitioners, the employers, trade unions and others interested in the development of the health of the labouring population of this country.

It is worth-while at this stage to consider the efforts of the employers in matters affecting the health and well-being of their employees. While special tribute is required to be paid to the humanitarian view of some employers who have supplemented government, municipal or local body medical institutions by establishing hospitals for their employees in industrial compounds, the majority have, however, lacked this foresight.

The labouring masses have also their general share in the inefficiency of the medical service they receive. Public opinion must also be blamed for not mustering strength of conviction to force their views of the necessity of efficient public health service on the legislator and the employer.

THE APPROACH TO THE PROBLEM OF NOTIFICATION

It is common knowledge that the registration and compilation of vital statistics in India is very defective and very little reliance can be placed on the accuracy of the figures contained in the official public health statistics. The omission to register cases of notifiable disease under various Provincial Public Health Acts is noticeable all over the country. In the case of common epidemic diseases like Cholera, Small-pox and Plague, this error is not much, as these diseases and their symptoms are widely known to the people, while in respect of other communicable diseases like typhus, typhoid and relapsing fever, the returns are very meagre.

Then, there are gross inaccuracies in the registered causes of mortality, in the absence of medical certification of death, due mainly to the fact that proper facilities for their diagnosis do not exist,

and the average practitioner, on whom the onus of notification rests, cannot take advantage of such facilities.

Under such circumstances one is forced to the conclusion that until such time as the defects of the Indian vital statistics as pointed out in the Bhoré Committee Report are not remedied on the basis of the recommendations made, there is little hope of ensuring that an early improvement of the state of affairs can be expected, and the notification of industrial diseases, as envisaged in the Factories Act, 1948, will be a piece of legislation to be shelved for some more years to come. However, in the wider interest of the toiling masses, an attempt has to be made to make the medical world conscious of their duty to this Section of the Factories Act and measures outlined to achieve the necessary object.

(1) A preliminary start can be made by associating the Central Agency for Health in the propagation of this piece of legislation as a statutory obligation to be carried out by the large body of medical men in the country.

(2) The same Agency may, perhaps, like to advise the All India Medical Council and through them familiarise the Provincial Medical Councils who can inform the medical men registered with them under Provincial Medical Council Acts.

(3) The Central Health Agency may also like to familiarise the Medical Faculties in the Universities through the Provincial Governments with this provision of compulsory notification of occupational diseases. Our hospital staff can thus be approached early.

(4) Another step to take is to approach the Indian Medical Association and with their co-operation get to individual members in the Provinces to volunteer necessary information.

(5) Amongst other methods of health propaganda,

- (i) the value of articles on Industrial Health and occupational diseases in medical journals cannot be overlooked,

- (ii) short talks on the above problems for the consumption of the labour population, labour unions and employers' associations,
- (iii) personal contacts by the Inspectors with the Industrialists during the course of their routine inspections,
- (iv) issue of industrial health literature and notes for guidance by the office of the Chief Adviser of Factories,
- (v) Visual approach through the film and lantern lectures and shows.

It is no less true of the Factory Acts than of other legislative measures that they achieve success in proportion as the machinery of control is effective. The experience of the last 14 years has enabled those who framed the Statute of 1948 to avoid most of the pit-falls that had encompassed the feet of their predecessors and to set up machinery that was in most respects adequate to its purpose. But in the battle of wits that must always ensue between those who devise the safeguards imposed by the legislature and those whose interest it is to evade the law, the prize goes to the quicker mind and the more nimble intelligence.

NOTIFIABLE INDUSTRIAL DISEASES FACTORIES ACT 1948

The industrial diseases due to be notified by medical practitioners to the Chief Inspector of Factories are :—

1. Lead Poisoning.
2. Lead Tetra-ethyl Poisoning.
3. Phosphorous Poisoning.
4. Mercury Poisoning.
5. Manganese Poisoning.
6. Arsenic Poisoning.
7. Poisoning by Nitrous fumes.
8. Carbon bisulphide poisoning.
9. Benzene Poisoning.
10. Chrome Ulceration.
11. Anthrax.
12. Silicosis.
13. Poisoning by halogens or halogen derivatives of hydrocarbons of the aliphatic series.
14. Epitheliomatous Ulceration.
15. Toxic Anaemia.
16. Toxic Jaundice.
17. Manifestations due to,
Radium,
X-Ray.

The doctor's fee for notifying is Rupees two and the penalty for failing to notify is up to Rupees Fifty.

This is the first of a series of articles by Dr. M. N. Gupta. We commend this and the succeeding articles, not only to the managers of our factories, but also to the workers. The Factory Inspectorate and the officials of the Public Health Medical and Engineering Departments would be well advised to study these articles *closely*. The subject matter is, of course, of general public interest.

—Ed., P.H.

HEALTH EDUCATION IN BASIC EDUCATION PROGRAMME

by

A Teacher

"Train up a child in the way he should go; And when he is old, he will not depart from it."

This is an ancient and established truth. The Central Advisory Board of Health Education have recognised that instructions to school children in hygiene should begin at the earliest possible stage and that it should not be left, as is largely done at present, to the secondary and high school period. The Bhore Committee have also recognized that in the early stages, such instructions should be entirely practical and be devoted to the formation of health habits and promotion of personal hygiene. Formal lectures in classrooms to the children attending the primary schools in health matters should be reduced to the absolute minimum.

DISAPPOINTING

Maulana Abul Kalam Azad, Minister for Education, Government of India, outlined his programme of universal basic education at a meeting of the Central Advisory Board of Education on the 15th January, 1949. He stated very properly,

"in order to make the programme of basic and social education one of the immediate interest and utility of the villages, it has been decided that the village schools will be not only places of instruction for the village children, but also centres of community life in the villages."

• He proposes to kill many birds at a shot. In his scheme, the village schools will provide instruction not only to children but also to

adolescents and adults. These schools should serve as places of recreation and sport. With the help of other Ministries such as Health, Labour, Information and Broadcasting and Agriculture, a composite syllabus would be framed in due course. He has outlined a twelve-point programme, setting out the aims he has in view, of the scheme for social and basic education. The disappointing feature comes in here. Notwithstanding the considered recommendation of the Bhore Committee as also those of the Central Advisory Board of Education, he proposes to arrange for lectures being given, *inter alia*, on hygiene. At present, the so-called school-buildings in the country are but models of insanitation and structural instability. Despite the fact that the Bhore Committee have stressed that divorce of practice from precept, will be prejudicial to the proper development of the growing child, no endeavour appears to have been made to ensure suitable school environment for teaching hygiene. The Bhore Committee have recommended that in order to stress the practical aspect of health, every effort should be made to improve the existing conditions in regard to school rooms, compounds, latrines and the other components of a school, so that the student may see in actual operation a sort of sanitary environment he is expected to aim at and encourage the demand for himself. It is obvious that minimal requirements for health and sanitation should be determined to ensure proper school environment. Without doing this, it is futile to expect any improvement in the child and sanitary conscience can never be instilled in young minds without a healthy school environment.

ESSENTIALS OF SCHOOL ENVIRONMENT

First and foremost, what extent of land should be delimited for locating the village school, should be determined. In doing so, it should be borne in mind that the children should not only be given physical education but also instructions in agriculture, cottage industries and the like. Adequate space is the *first* requisite. Secondly, to ensure the inculcation of hygienic habits in the minds of young India, a health parade every morning should be organized. This would mean the provision of facilities for maintaining personal cleanliness, a bath, a washing place, a sanitary latrine and similar other facilities. Not only should these facilities be provided, but also the pupils should be taught how to use them. This is very important.

The importance of cleanliness all round, should be underlined in the course of the training. The pernicious habit of indiscriminate spitting all over the place should be prevented, by pointing out to them the dangers that would arise therefrom. The importance of safe drinking water should be brought home to their minds. How water gets contaminated and how water-borne diseases spread should also be taught.

The construction of school buildings is not so important as to ensure a healthy environment of our schools. Instructions could be readily imparted under an airy, thatched shed. As and when funds become available, the construction of pucca buildings could be taken up. Whatever money is available should *first* be utilized for providing a healthy and sanitary school environment.

Above all, the teachers should first be taught on the essentials of sanitation and health.

QUALITY AND NOT QUANTITY

At provincial levels, the situation is no better. The Madras Minister for Education proposes to bring into existence myriads of schools for imparting basic education without considering the primary aspect of providing a suitable school environment. The Hon. Sri T. S. Avinashilingam Chettiar can claim to have some experience in running schools. He has provided in the schools under his own management a healthy environment. But why he has not stressed the importance of providing it in other schools, is somewhat disquieting. It would seem desirable to have a few schools satisfying the sanitary and health requirements instead of hovels and pigsties in the name of educational institutions; it is the quality that matters and not the quantity.

WHY TALK OF GANDHIJI'S IDEALS?

The Minister for Education, Government of India, is a disciple of Mahatmaji. He can not be unaware of the fact that Mahatmaji has stressed times without number the importance of improving the sanitation of our villages and of raising the living conditions of the masses. When even so well-known a disciple as Maulana Abul Kalam Azad overlooks the most important teaching of Gandhiji, the masses should continue to live in disgraceful insanitary environment and perish as they had been doing all these years under alien rule. So far as the masses are concerned, the independence of India means nothing to them.

Apparently, our leaders *still* believe in doping the masses by bringing in the magic name of Mahatmaji in the hope of winning applause for their pet schemes, which ignore his basic teachings!

—Ed., P.H.

IF TO-MORROW WE WERE SURE OF A SPECIFIC FOR LEPROSY?

by

T. N. Jagadisan



In this article I propose to consider the probable changes in the various aspects of the leprosy problem and in our outlook on the disease when we are able with certainty to say that we have a specific for leprosy. A specific should be applicable in its effectiveness to each and every case though the method of administration and the duration of treatment may vary. In short, a specific should 'kill the bug' in each and every case given adequate treatment with it. What scientifically we mean by "cure" is the killing of the bug, but we know that the disease can leave scars and deformities even though the bacilli are absent. As there is often confusion among the public about the term "cure" we have to take care to tell them what we mean by "cure" and what we expect a specific to do.

I venture to speculate upon this question of how the certainty of a specific will affect our approach to the leprosy problem because there is at the present moment a great enthusiasm amongst many workers about the sulphone group of drugs. I believe that it will be true to say that clinicians of large experience all over the world feel that the sulphone drugs are capable of being

effective in serious lepromatous leprosy. I believe that when confronted with a direct question "how near are we to being sure of a specific for leprosy?" most of these leprologists would pause and hesitate and say "It is difficult to tell, but I think we are fairly well on the way to such a surety in no long time."

Now sometimes hope of a specific becomes to the eager physician and the even more eager patient identical with the specific itself. We already see evidences of this trend. In my visits to clinics and sanatoria I find to my amusement sometimes and sometimes to my consternation that a case or two are put on diasone for instance, and that the physician is very enthusiastic about the effect. The result is that patients, even neural patients, demand the new drugs and the general physician dabbles in them. We have now begun to worship the bottle of pills as we did of old the bottle of hydnocarpus. I should be as far from speaking lightly of a promising drug as I should be of chaulmoogra which with all its limitations has been of immense value in the treatment of leprosy. But I am concerned in this article to sound a note of warning against

repeating the mistake that was made 20 years ago when chaulmoogra remedies were not discovered. Our attention was so fastened on treatment that we almost thought that that alone could do the trick. It may be that our expectations are going to be better fulfilled, perhaps far better fulfilled, than formerly. But even so, we should resist the tendency to lose sight of the many sides of the problems that have not yet emerged into proper view and concentrate on the treatment aspect of the problem. Rather if we succeed in establishing the effectiveness of the treatment should we look around and take a wider view of the subject.

In protesting against the complacent attitude of the physician, the possible and indeed almost certain misuse of the drug in the beginning and the craze of the patient for something new, I do not forget the great value of fresh hope in a situation so full of frustration. On the other hand I am concerned that this fresh hope should be so fulfilled as to enable us to derive from it the fullest benefit. For who will deny the remarkable gain in outlook when once we are able to hold up the hope of dealing effectively with lepromatous leprosy so as to be able to render a case negative beyond the fear of relapse. From the point of view of prevention also, the materialisation of this new hope will help, not by doing away with the necessity of preventive measures but by making preventive measures easier in that the treatment will become a more effective ally. A hope of reducing the infectivity of a case, not to speak of rendering an infective case completely non-infective, is of supreme importance from the preventive point of view. I believe that I am right in saying of the sulphones that they are expected to reduce the infectivity of a case almost to vanishing point by lessening the number of bacilli and perhaps by rendering the bacilli gradually less capable of infective power even when they continue to exist in some numbers. It is clear, therefore, that when the

new hope materialises, as we all hope it would (for it is man's privilege always to hope), it will be a great day, but that will also be a day of a searching challenge—a challenge to evaluate the problem in all its fullness and with modesty and realism and without extravagance or dogma.

Our enthusiasm about the new drugs has to be moderated by the following considerations:—

(1) *To have a remedy is one thing; to take it to the people who want it, another.* This is especially the case in India and particularly so in rural India. With respect to leprosy—much-neglected leprosy—this is specially true. Perhaps not more than 3 to 5 per cent. of the leprosy patients of the country get even cheap chaulmoogra. How then shall we hope to give the benefit of costly drugs which need administration under controlled conditions to a wide number of our leprosy patients? The drugs should become very much cheaper, they should be applicable under less controlled conditions, especially in the out-patient clinics of our villages. Moreover there should be a net work of organization that will effectively carry these remedies to the remotest corners of our country.

(2) *Even though we have a cure, it is best to tackle the cause, and by cause I mean much more than the bacilli.* I mean the whole complex of physical and social environment, habits, customs, etc., that are responsible for the spread of ill-health in general and diseases in particular. Hence the colossal preventive problem will remain and should receive priority. In India, I feel convinced that even with more effective treatment, the only way of controlling leprosy in the community will be to prevent people from getting it, and that effective treatment itself should be regarded primarily as an ally to prevention.

(3) *Nearly 80% of our cases in India are neural and most leprologists are at present agreed that the sulphone drugs are of no avail in neural cases and are not applicable to them.* So the sulphone

drugs, as far as we know, will leave a good bulk of our leprosy problem as it now is.

(4) *We should reckon with the residual deformity not only in neural leprosy but also in lepromatous cases, especially in association with reaction in which nerves are involved.*

But the proved effectiveness of the sulphone drugs in lepromatous leprosy will, if we went about it with modesty and intelligence, bring in its wake a full realization of the leprosy problem as it is—a problem not only of killing the bacillus but of preventing and correcting deformity and rehabilitating patients physically, psychologically and socially. For, released of the need of searching for a specific,—a search so important and engrossing—, we shall then realize that medicine alone cannot do much and that a wide variety of work, (so far very dimly conceived of or never thought of at all) should be planned on an organized scale. If to-morrow you proclaimed with truth “We have a specific for leprosy”, you will, if you are resolutely honest, hear a multitude of challenges. First, the challenge of the village. I hear almost the pathetic cry of the village patient:—“See us in our hunger, nudity and utter neglect. Before giving us medicine give us an environment in which medicine can reach us and really help us.” I hear the patients in town and village say “By all means cure us, but what is the use of your curing us if you still leave us in the prison of public abhorrence? Well or ill, it is not very different when you are not wanted anywhere and when you have nowhere to go to.” I hear the anguished cry of the deformed patient: “What is the use of your ‘negative’ certificate to me when there are these disabling residual symptoms and when I get no

occupation. I wish I were positive and continued to be so always. I could have a place in a sanatorium.” I hear the cry of one of your patients on whom sulphones have produced a reaction leaving a drop foot for instance or other residual deformity: “Oh! the cursed day when the sulphones came. I was on chaulmoogra and that would at least have kept me always in the asylum of a sanatorium. But these sulphones have brought me my discharge and I am now reduced to the unhappy position of the neural case who is wanted neither in the sanatorium nor in the home, nor the street.” I hear again the voice of the child of the patient:—“You have cured my parent. But you have not cured the public of its ignorance and fear. You may take the disease off my father but what of me who has to go through life with a stigma—as a marked person—a ‘leper’s’ daughter?”

Yes. When we have effective treatment we shall then realize that medicine is not the leprosy patients’ real need—but the right and opportunity to live as others do, doing a job and earning his living.

A year or two ago, I used to say “Even if a specific were not forthcoming for another century, we could still with available knowledge and known methods control leprosy in less than a century.” Now I feel like saying, “If we had a specific tomorrow, still if we neglected the planning on a wide scale of education, prevention and rehabilitation, we shall find that leprosy remains where it is even at the end of another century.” But I like to think that a specific would throw out the wider challenge and show leprosy to be what it is, a test of social sincerity, and that we shall answer the challenge and obtain the victory.

MATERNITY AND CHILD WELFARE IN ENGLAND AND WALES (Contributed)

BRIEF HISTORY

In 1918 the Maternity and Child Welfare Act was passed by Parliament and with the creation of the Ministry of Health in the following year began the history of the general care of children under 5 which has been exercised by the Maternity and Child Welfare Services of the Ministry and operated by the responsible Local Authorities in England and Wales. Scotland has its own Service, administered by the Department of Health for Scotland.

In 1900, the infant mortality rate (death in the first year of life) in England and Wales was 154 per thousand registered live births. In 1919, at the inception of the Ministry of Health, it had fallen to 89 per thousand registered live births, owing to improvements in social conditions generally and to early work in the field of maternity and child welfare by voluntary organisations and local authorities. By 1939 this rate was nearly halved (50 per thousand live births); the subsequent decrease in infant mortality to 45 per thousand related live births in 1944 and 41 in 1947, is shown in the table given hereunder.

Child welfare begins with the care of the expectant mother. Enquiries instituted in the early days of the new Ministry revealed that out of the cases of 5,000 mothers who had died in child-birth, 45% of the deaths were considered to be from preventable causes, such as no ante-natal supervision, errors during delivery by doctor or midwife, insufficient care at child-birth or lack of supervision afterwards. The protection of the mother and new-born child from preventable hazards was regarded as primary and urgent, and the Ministry instigated reforms in medical and midwifery education. Amongst other requirements laid down were the avail-

ability of ante-natal supervision and competent obstetric services for every pregnant woman, and the provision of facilities for the prevention and treatment of puerperal sepsis.

From the few Infant Milk Depots established between 1899 and 1905 for the weekly supervision of babies under 2, and later the “Schools for Mothers”, developed the Maternity and Child Welfare Centres where ante and post-natal supervision was given to the mothers and care for the children until they reached school-age.

Steady progress was made during the twenty years between the two wars. Maternal deaths, which in 1900 were 4,000, dropped to 3,028 in 1919; 2,787 in 1929 and 2,000 in 1939. In 1947 maternal deaths were 1,059.

1939-1948

At the outbreak of war it was recognised by the Government that the maternity and child welfare services built up in England and Wales since 1919 would stand the country in good stead, but that progress in this field was threatened by total war and services must be further strengthened.

The Government’s war-time nutritional policy was framed to include a system of priorities for mothers and children, the corner-stone of which was the National Milk Scheme (in operation by July, 1940) with its principle of a pint a day for all expectant and nursing mothers and children under 5. Further priorities or additional allowances (vitamin supplements, extra eggs, etc.) were introduced as the war advanced and the difficulties of food distribution increased. These measures are still in force. The existing maternity and child welfare services will remain, in addition to those new developments under the National Health Service Act (1946), which came into force on July 5, 1948.

The vital statistics in the table below show the results of the country's maternity and child welfare services and nutritional policy : the quarterly figures for 1948 record continued progress.

VITAL STATISTICS—ENGLAND AND WALES

YEAR.	Live Birth Rate (per 1,000 total mid-year population).	Maternal Mortality (Rate per 1,000 total births). *	Still births (Rate per 1,000 total births).	Neo-Natal (1) deaths (Rate per 1,000 related live births).	Infant Mortality (2) (Rate per 1,000 related live births).	Death Rate (3) (all ages 1,000 mid-year population).
1939 ..	14.8	3.13	37.8	28.3	50.6	12.1
1940 ..	14.1	2.68	36.1	29.6	56.8	14.4
1941 ..	13.9	2.80	34.4	29.0	60.0	13.5
1942 ..	15.6	2.48	33.0	27.2	50.6	12.3
1943 ..	16.2	2.29	30.2	25.2	49.1	13.0
1944 ..	17.7	1.93	27.7	24.3	45.4	12.7
1945 ..	15.9	1.80	27.6	24.8	46.0	11.4
1946 ..	19.2†	1.43†	27.2†	24.5†	42.9†	11.5†
1947 ..	20.6†	1.17†	24.1†	..‡	41.3†	12.0†

* Including abortions. † Provisional. ‡ Not yet available.

(1) Neo-Natal death means death within 4 weeks of birth. (2) Infant Mortality means deaths among infants under one year. (3) Deaths include those of non-civilians registered in England and Wales throughout.

WELFARE CENTRES

Before the National Health Service Act introduced the additional services outlined below, it was under the Welfare Authority's arrangements and mostly in the Welfare Centres that free ante and post-natal medical attention and care was given to mothers who, in many cases, could not afford to go to a private doctor for these services. And it was through the Centre that the expectant mother was able to book for her confinement, either in her home with the municipal midwife (who would call a doctor if necessary) or in a hospital. She paid a

reasonable sum towards the cost of the last two services if she were able, otherwise they were provided free. Also it was in the Welfare Centre that the mother got to know her Health Visitor, who with the midwife gave her mothercraft advice before the baby was born; who visited her home after the baby's birth and regularly until it went to school, and weighed the baby and the toddlers when the mother brought them to the Welfare Centre, so that records of their progress could be kept. These services are continuing under the National Health Service.

ENGLAND AND WALES

Infant welfare centres open at 31st December, 1947
Number of children under 1 year who attended for the first time
Number of women who attended ante-natal clinics or received ante-natal care by G. P. arrangement.
Number of first visits paid by Health Visitors to children under 1 year
Total number of visits to children between 1 and 5 years

	1943.	1947.*
.. .. .	3,825	4,388
.. .. .	469,324	627,557
.. .. .	542,177	715,095
.. .. .	661,629	885,119
.. .. .	4,519,091	4,233,407

* Provisional.

Over 60% of the mothers who had babies in 1947 received ante-natal care in the welfare centres or under arrangements made by welfare authorities with general practitioners. Some 70% of the babies under one year old attended welfare centres, and Health Visitors paid visits to more than 90% of children over one year old.

ADDITIONAL PROVISIONS
UNDER THE NATIONAL HEALTH
SERVICE ACT

Responsibility for the Maternity and Child Welfare services, formerly vested in the 404 Welfare Authorities, is now concentrated in the 146 local health authorities (County and County Borough Councils) in England and Wales. It is their function to provide maternity and child welfare clinics, midwives, health visitors, district nurses and domestic helps. They will also see that their services are closely integrated with the hospital service.

The expectant mother, who is having her baby at home can now have, without charge, in addition to all the above, the services either of a General Practitioner Obstetrician (a doctor specially experienced in maternity work) or her own family doctor if she prefers it and he is willing to undertake her maternity care.

The doctor who undertakes her maternity case will carry out certain ante- and post-natal examinations and attend her confinement if he thinks it advisable. The remainder of the ante-natal care is provided by the midwife, in conjunction, in many cases, with the maternity and child welfare centre. These welfare centres will still have important functions to fulfil. In their friendly surroundings the mothers learn much about mothercraft and the valuable welfare foods available for them are distributed. The midwife will attend during the confinement and lying-in-period; so every expectant

mother should book a midwife as well as a doctor.

A woman who believes she is pregnant should go without delay to her family doctor, or to her local midwife or to the Welfare Centre. Any of these will see that she is put in touch with any other services she may need. Behind them are the whole range of hospital and specialist services.

Confinements in hospital will be available for mothers in cases of medical complication, and priority given where home conditions are unsuitable and for first babies. Applications for hospital admittance will be made through the doctor, or where admission is required because of unsuitable home conditions, through the Medical Officer of Health.

On receiving her certificate of pregnancy every expectant mother should take it to the Food Office without delay as she will then be eligible for the extra milk, foods, welfare foods and clothing coupons under the Government's priority schemes. She should ask at the Food Office for the current Welfare Foods leaflet which will give her valuable information and details of the extras available for her. National dried milk and the welfare foods are distributed from Welfare Centres as well as Food Offices.

DENTAL CARE

In the past, insufficient care has been given to the dental health of expectant and nursing mothers and young children. The Inter-departmental Committee on Dentistry recommended in 1944 that special provision should be made for dental treatment for these classes. The Act implements that recommendation, placing a specific duty on Local Health Authorities to make arrangements for the dental care of expectant and nursing mothers and young children, securing for them a priority service of dental examination and, where necessary, treatment.

VACCINATION AGAINST SMALLPOX AND IMMUNISATION AGAINST DIPHTHERIA

Since the middle of the last century infant vaccination against smallpox has been compulsory by law, save where parents applied for exemption. This method did not achieve even a 50% vaccination of babies born.

With the introduction of the National Health Service Act it was felt that the time had come to put vaccination on the same voluntary basis as diphtheria immunisation which, with the intensive education given on this safeguard, has achieved such a remarkable success: (deaths from diphtheria have fallen from 2,641 in 1941 to 244 in 1947; cases from 50,797 to 10,465). The National Health Service Act, therefore, repealed the Vaccination Acts and the local Health Authorities now have the responsibility of providing a service for smallpox vaccination and diphtheria immunisation. The fact that the family 'doctor' in the Health Service will take part in these services means their greater accessibility and the education of young parents on these two points will continue unremittably.

HEALTH VISITORS

The Act has made an important extension in the scope of the health visitor's work, since instead of being concerned solely with the mother and child she has now also been made responsible for giving advice to the whole family in their own homes, on the care of the sick and the measures necessary for preventing the spread of infection.

Health visitors are State registered nurses with general hospital or children's hospital training, and they must hold a certificate of at least Part I of the midwifery training, in addition to the health visitors' certificate.

The health visitor will continue to visit the mother in her home, when the midwife ceases to attend or on return from hospital after the

birth of the baby. Health visitors give specialised advice on breast-feeding and the care of the baby, and on the nurture and management of children up to five years of age when they go to school. They will continue this health education but their sphere is now the household as a whole. They will be the link between the family and the health services.

DOMESTIC HELP

Under the National Health Service Act the Local Health Authorities have the powers which were previously held by the Welfare Authorities to provide domestic help.

If a mother has her baby at home and really needs someone to take over her household duties she should ask the midwife or doctor, or at the welfare centre about the local scheme. The mother will be expected to pay what she can afford towards the domestic help service. Domestic helps may also be available in cases of illness or where there are children or old persons or mental defectives in the household.

The extent to which domestic help schemes will be available to meet the demands of the public will depend upon the supply of suitable women available in the area; the recruitment of the right type has always proved difficult and it will clearly be harder to provide a service in the rural parts of the country than in the towns.

HOME NURSING

Local Health Authorities also provide a home nursing service to attend people who require nursing in their own homes.

Some of the many services outlined above are already highly developed, but obviously for some time there will be no more midwives, health visitors, or home nurses available for the services than there were before the 5th July, when the new schemes under the Act came into operation, and they will take time to build-up to full efficiency.

NATIONAL INSURANCE ACT : MATERNITY BENEFIT

Under the National Insurance Act, 1946 (operating from 5th July, 1948), the mother receives a *maternity grant* of £4 on the birth of her child (£8 if she has a twin). If the mother normally goes out to work she can also qualify for a *maternity allowance* of 36/- a week for normally 13 weeks beginning about 6 weeks before her confinement, provided she does no work during this period. For other mothers who work solely on their own home duties, there is, instead of a maternity allowance but in addition to the maternity grant, an *attendance allowance* of £1 a week for the four weeks after confinement.

Particulars and a claim form for maternity benefit can be obtained from the local offices of the Ministry of National Insurance, the address of which is available at the local post office. An explanatory leaflet and claims form can also be obtained from the Maternity and Child Welfare Centre.

SPECIAL CARE FOR BABIES

Special needs arise in the care of the illegitimate baby and the premature baby, to meet which the Minister of Health has, in the past, sent circulars to Welfare Authorities with recommendations for action to be taken. These services will now, with the rest of the maternity and child welfare provisions, become the responsibility of the Local Health Authorities.

The care of illegitimate children is a social problem without a complete solution, since every child needs the interest and affection of both a father and a mother, and the security of its own home in which to develop fearlessly. Much has been done in this field, by Social and Moral Welfare Workers, to help the mothers and safeguard the children.

In 1943 recommendations were made to Welfare Authorities in Circular 2866 on the desirability of appointing a special worker,

experienced in the demands connected with this problem and the organisation and administration needed for dealing with it. Cooperation was advocated with existing workers in this field, with Health Visitors and, where practicable, with the officers engaged in evacuation welfare services or other social work.

By 1947, 377 of the Welfare Authorities had schemes making special provision for this need, many in co-operation with Moral Welfare Associations. 81 Welfare Authorities had appointed specially qualified social workers, and others had arranged for the health visitor in charge of this work to acquire experience in case work with a worker attached to the local Moral Welfare Association.

An officer on this work helps the mother find accommodation before and after the confinement. Arrangements for the confinement and for ante-and post-natal care are made in the usual way.

Restrictions on building and staffing difficulties have limited the development of special accommodation, but homes and hostels for unmarried mothers and their babies and residential nurseries have been opened and arrangements made for finding suitable foster-mothers and guaranteeing their payment.

The girl's home is helpful as a background for the child if her parents are willing to offer it. But the mother often needs assistance in finding employment and, if the baby is not able to remain with its grandparents it is preferable to find work enabling the mother and child to be together (in an Institution or Residential Nursery, or in private employment); if the mother's work separates her from her baby, a suitable fosterparent should be found for the child.

The mother may also need advice on obtaining an Affiliation Order or otherwise securing assistance from the father of the child. In cases where the mother is very young, or the wife

of a man not the father of the child, she may need advice about legal adoption.

It is the Ministry's view that, denied its own home, a normal child has the best chance for happy, healthy development in a good foster home where it is an individual in a family circle.

In relation to the particular care needed by babies born weighing $5\frac{1}{2}$ lbs. or less, called "premature" babies, a circular was sent out in 1944 (20/44) recommending, amongst other things, that special equipment should be made available by local authorities to be lent to mothers for use where babies can be nursed in their own homes. This equipment includes draught-proof cots, warm and suitable clothing, hot water bottles and special feeding equipment.

In addition it was recommended that "premature" babies should be attended by midwives and health visitors with special training and experience of their needs. About half the babies who die in their first month of life are babies who are born in this category, and great effort is called for to reduce this cause of "neo-natal" mortality.

DAY NURSERIES

Before the war there were only about 100 days nurseries, 21 of which were run by the Local Authorities and the remainder by Voluntary Associations. Under the exigencies of war many additional day nurseries were established during the years 1941-1944 to care for the young children of women who were aiding the war effort. The number of these war-time day nurseries reached a peak of 1,550, but the number had fallen to about 1,300 in March 1946 owing to the easing of the demand for nursery places following the end of the war.

In December 1945 the Government announced its future policy as regards nursery provision in a Circular (No. 221/45) issued by the Ministers of Health and Education. The Ministers concerned accepted the view of medical and other

authority that in the interest of the health and development of the child, no less than for the benefit of the mother, the proper place for the child under 2 is at home with its mother; that under normal peace-time conditions the right policy to pursue would be to discourage mothers of children under 2 from going out to work; to make provision for children between 2 and 5 in nursery schools and nursery classes, and to regard day nurseries and daily guardians as supplements to meet the special needs of children whose mothers had to go out to work, or whose home conditions were unsatisfactory.

The Ministers recognised, however, that this policy represented an ideal which could not be attained immediately, and that during the post-war period the need for women workers in industries vital to essential home production and for exports might well be as urgent and important in the national interest as it was for war production.

The great majority of the war-time nurseries which were in existence on 31st March, 1946, have continued either as day nurseries or as nursery schools or nursery classes. On the 31st December, 1947, there were 908 day nurseries in England and Wales with places for 43,405 children from 0-5 years old.

Before July 5, these were administered by Welfare Authorities; they will be continued, so long as the need for them exists, by the Local Health Authorities as part of the services under the National Health Services Act, with the aid of the 50% grant from the Exchequer which is payable for all Local Health Authorities' services under the Act.

Much progress has been made in establishing a new system of training for nursery nurses whereby students undertake a two-year course, (a) in practical work in nurseries, and (b) further education in vocational and general subjects, enabling them to sit for the examination for the certificate of the National Nursery

Examination Board. Successful girls are then qualified to take the post of nursery nurse in a day or residential nursery, or of nursery assistant (Class 1) in a nursery school or nursery class, or to work in private households. The National Nursery Examination Board was established early in 1946 and about 1,500 girls have been awarded their certificates. There are at present about 3,500 students in day and residential nurseries.

In order to increase production to aid the export drive, it became necessary to augment the labour force in the cotton and wool industries. One of the steps taken by the Government has been to encourage Local Authorities and mill owners to establish more nurseries in order to enable a trained married woman with young children to return to these industries. In consequence Local Health Authorities in the cotton areas have in hand about 50 schemes for new nurseries, and when these are in operation they will cater for over 2,000 additional children. Local Health Authorities in the wool areas also have schemes for the establishment of more nurseries.

Coupled with this effort the mill owners themselves, who often have buildings available which can be readily adapted, are providing more nurseries. In the cotton areas there are 62 mill nurseries in operation and about 45 more are in prospect. The total number of nursery places at present in these mill nurseries is just over 2,000, and when all the additional mill nurseries proposed are in operation the total number of children cared for in these nurseries will be over 3,000.

Young children are particularly susceptible to infectious disease and unless nursery premises and staff are of proper standards there may be risk to their health. For this reason the Government have passed the Nurseries and Child Minders Regulation Act which provides for the registration and supervision of factory and private nurseries and also of persons who in their own homes look after children under 5 for reward. The Local Health Authorities who are responsible for the local administration of the Act may refuse to register unsatisfactory premises or persons.

In this part of the world, the annual reports of our Public Health Departments, take credit if there be any reduction in infantile mortality and throw the blame on somebody else's shoulders, when the maternal mortality rate is high.

The stereotyped methods of drafting administration reports can not certainly educate either the government or the people. We have commented at length in these columns on the methods of presenting administration reports. Why is it we ask, that the officers in charge of maternity and child welfare centres have not attempted to educate public opinion somewhat on the lines on which the foregoing article is written? Such analytical and factual reports would not only educate the Ministries of Health and the public but also serve thereby as an incentive to progress.

—Ed. P.H.

MODERN TRENDS IN PUBLIC HEALTH*

by

Major P. Mohamed Ali

M.B.E., M.B., B.S., D.P.H.,

Assistant Director of Public Health, Cochin State



The present day conception of Public Health is vastly different from the old. The old idea of what constituted "health" no more holds good. Now, it is not enough if one is free from disease alone. Health is something more positive. The word "Health" as defined in the constitution of the World Health Organisation, connotes "a state of complete physical, mental and social well-being". In the words of the Theosophist, Krishnamoorthy, "one must live fully, freely and completely". This new idea of health has given an entirely new orientation to Public Health activities. Public Health in the olden days consisted mainly of prevention of communicable diseases, supervision of drains and quarantine and was the concern of the dumping ground of never-do-well, indifferent, and unemployed doctors. It was but a niche of the well-organised Medical Department. All this is rapidly changing. It is fast occupying a position of unparalleled prestige. No more can anybody throw it into the unenviable insignificance which is its lot in many of our States today, and the conspiracy of planned hostility

to relegate Public Health problems to a state of indifference can only be continued by a State at its own peril.

Thus the modern conception of Public Health is all-inclusive. That is, all the problems that help to bring about "a state of complete physical, mental and social well-being" are to come within the purview of Public Health. A new term "Social Medicine" is being used increasingly since its introduction in England a few years ago. The term is more comprehensive than either the public health, preventive medicine, clinical medicine or social work currently being practised and it is better to regard it as a sort of composite into which the best of all the elements designed to promote the health of the people is gathered together.

The upshot of this new outlook is likely to revolutionise both the administrative direction and the actual scope of Public Health activities alike. In fact, it has already taken place in almost all countries where the supreme importance of Public Health has been fully realised. The old distinction between the curative and preventive

branches has already disappeared in those countries. The hospitals are only a limb of the Public Health Department and these "Repair shops" are not allowed to dominate the show at the expense of other Public Health activities. No one finds in Canada and America the Mongolian Monster (representing the Health Services) with an exceedingly small head (representing the public health section) and elephantoid limbs, i.e., the hospital services, as we find in our own country. They have realised that a bottle of mixture or a surgical operation will not help very much. They have also realised that "in the campaign for improved health, drugs, vaccine and sera can in no way replace such essentials as a hygienic home, good food, fresh air, and a safe water supply". Lord Wavell, the Soldier-Statesman, while opening the Hallet Hospital, Cawnpore, declared: "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". In short, one should not want to wait for a man to fall ill to do something for him.

As a necessary corollary to the breaking down of compartmentalism there is to be only one administrative Head for both the curative and preventive branches. "The unification of the two Departments one of which has long enjoyed undue weightage is fraught with one risk. The success of unification, the attainment of progress and the ultimate welfare of the people will depend to a large extent on the Head of the Service who is responsible for initiating and executing improvements, who gives directions to the entire Service, keeps up their interests and gets the best out of them. If this Head happens to be one who has his eye on hospitals and looks askance at the field of prevention, then woe unto unification! But even this risk is no deterrent to a salutary reform."

Apart from the curative branch, seven well-defined divisions are to be listed in the functions

of a well-organised public health set up of a State. They are (1) Recording, tabulating, analysing, interpreting and publishing the natality, morbidity and mortality experience of the community—i.e., the so-called Vital Statistics. (2) Control of communicable diseases including Tuberculosis, the Venereal diseases, Malaria and Hookworm disease. (3) Control of environmental factors related to health including supervision over water, foods, occupational hygiene and general sanitation. (4) Public Health Laboratory service, diagnostic, therapeutic, epidemiologic and analytic. (5) Protection of maternity, infancy, and childhood, from the counselling prior to marriage through child-bearing and until the child has completed school age. (6) Nutrition and (7) Public Health Education.

Now let us see the recent advances in some of these several heads. The most outstanding one relates to the subject of Environmental Hygiene. Unless an environment conducive to healthful living is created, one can never expect a community to be healthy. For this, suitable housing, sanitary surroundings and a safe drinking water supply are indispensable. "In interpreting health and disease man must be considered in relation to his social and physical environment. The study of disease as a community problem demands that the approach should be on a wide basis so as to include social and economic factors such as housing, nutrition, poverty and ignorance of the hygienic mode of life." Formerly the Medical Officers of Health were made responsible for the provision and improvement of these things. It is no more his functions. It is now being increasingly and clearly recognised to be the responsibility of a specially trained Engineer. He alone can carry out these functions successfully. Planning, execution and supervision of water supply, drainage, housing and ensuring occupational hygiene, disposal of night soil and refuse and a score of other duties once assigned to the Medical Officer of Health are now

* A paper read in a Professional Meeting of the All-Cochin Medical Association held in the Trichur Town Hall on 13th February 1949.

considered—and considered with excellent reasons—the primary and legitimate duties of a trained Engineer. Thus the emergence of the Sanitary Engineer in Environmental Hygiene is the most prominent feature of modern Public Health activities. Whether in the fight against malaria, cholera, plague or tuberculosis, improvement of environmental hygiene should have top priority.

Tuberculosis, malaria and venereal diseases are being now tackled on new lines and with more potent weapons. "The eradication of tuberculosis is now an expectation sufficiently well-grounded to justify shaping our tuberculosis control programme towards this definite end. We have reached the state at which the biological balance is against the survival of the tubercular bacillus". Anti-biotics like Streptomycin and preventive BCG vaccination are the two new weapons against this fell disease. Emphasis is laid more on clinics and case finding than on Sanatoria. But as Connybere said: "Phthisis is a social condition with a medical aspect" and unless environmental hygiene and standard of living are raised, no great advance can be expected in our country. With the advent of Sulphonamides and Penicillin, venereal disease control has been greatly accelerated. It has been computed by an American authority that there are about 40,000,000 cases of Syphilis and 9,000,000 cases of Gonorrhœa in the world and he is of opinion that by spending 10 dollars for each syphilitic and 75 cents for each Gonorrhœa patient, these twin diseases can be controlled at the cost of 420,000,000 dollars in the course of 3 years!

The introduction of Dichloro Diphenyl Trichloroethane—DDT for short, the fate of the disease-carrying insects is sealed. The once-thought financial impossibility of controlling rural malaria no longer holds good with the spray killing of mosquitoes. People who know what they are talking about are now thinking of eradicating dangerous anophelines and not merely

controlling them. In Gambia, the authorities are now offering 10 cents for a vector species if anybody can find one! Thus India can control, nay, eradicate malaria that cost us 187 crores of rupees a year by spending a twentieth of that amount—if not less.

The Sulphonamides, antibiotics, radio-active isotopes, DDT—to mention only a few new instruments which have been placed in our hands—foreshadow a new move forward, a new renaissance, a new period in human development and it does not seem impossible to believe that within a period of no unreasonable duration, we shall be able to limit the ravages of almost all the ills human flesh is heir to.

Another noticeable trend in public health is the increasing interest shown to Mental Hygiene. It seems to me that public health is bound to move far more actively than it has up to the present time, into this field. Easily 6% of the population of India are suffering from some form of mental disease or personality disorder. It is foolish to blind our eyes to the vast difficulties which must be overcome in developing an effective mental hygiene programme. Our knowledge of the whole field is narrowly limited and continued and intensive research over many years will be necessary to give us the tools for discovering who are the potential misfits or psychopaths and what types of preventive work are best adapted to these sub-clinical cases.

In our efforts to foresee the contours of the future, I believe that public health is bound to think more and more in global terms. Disease vectors do not respect any geographical boundaries and the fight against disease is a Total War in which all the resources in every country should be mobilised to fight it. Whether or not he likes the idea, the health of a man's neighbour now concerns everyone on this planet. With air-planes criss-crossing the world from every direction in a few hours' time, it could not be otherwise. The birth of the World Health Organisation

under the auspices of the United Nations is the direct result of the realisation that it is only by pooling, co-ordination, co-operation and mutual help could the battle of health be fought and won.

When speaking about the modern trends in Public Health, one cannot omit the current ideas regarding the financial aspects of the schemes involved. Public Health Departments in our country exist on a hand-to-mouth basis and occupy the unenviable status of a poor distant relative of their respective Governments. This is in marked contrast to the conditions obtaining in civilized countries. It has not been sufficiently realised that investment of money on Public Health is a gilt-edged one which "will yield not deferred dividends to be collected years later, but immediate and steady returns in substantially increased productive capacity." There will be dividends also in terms of less malaria, less cholera, less infantile and maternal mortality—in short, in less sickness. That is why countries like America are spending huge sums on Public Health schemes. In India all our schemes are foundered on the rock of finance. Jawaharlal Nehru, while presiding over the first Health Ministers' Conference in New Delhi pertinently asked: "If a nation can find money to wage a total war (as in the time of the second World War) why can't it find money to fight against disease and disability" (or words to this effect).

It is now being widely accepted that Good Health is Good Business. Let me quote from a report of the National Planning Branch of the American Public Health Association: "It is estimated that this country (America) spent about 174,000,000 dollars in 1943 for the care and control of Tuberculosis. When the Tuberculosis death rate becomes about 1/4 of its present figure, that is, about 10 per 100,000 per year, this expenditure can be reduced to about 37,000,000 dollars, a saving of 137,000,000 dollars a year. This 10 per 100,000 will be

reached within 20 years at the present rate of decline.

"In addition to the 174,000,000 dollars we spent on Tuberculosis, we lost in that year 348,000,000 dollars worth of goods and services which could have been produced by those now disabled with Tuberculosis. This amount can be reduced to 35,000,000 dollars, a saving of 313,000,000 dollars a year. Over and above these staggering amounts, we lost 229,000,000 dollars in 1943 in the future net earnings of the male heads of families who died of Tuberculosis that year. It is estimated that this could be reduced to 22,000,000 dollars a year, a saving of 207,000,000 dollars"! On the basis of these figures, the author of the report asks: "Are we not justified in asking Mr. United States, Incorporated, if he wishes to save the sum total of these amounts, viz. 657,000,000 dollars a year?" That is about America. Take the case of India with reference to one single disease alone, viz., Malaria. Col. Sinton's modest estimate is that India loses about Rs. 1,870,000,000 a year due to this disease. Paul Russel of the Rockefeller Foundation working in the Madras Presidency, has proved that Malaria can be wiped out at the per capita expenditure of 4 annas. Thanks to DDT—this rate can still further be reduced. Thus it is simple arithmetic that by spending Rs. 100,000,000 (on the basis of 40 crores of population) India can save Rs. 1,770,000,000. Does not this simple fact show that Good Health is Good Business? Perhaps it is time we, Public Health Workers, ceased thinking of ourselves as mendicants and assumed the role of investment counsellors! That is perhaps why Britain has already planned to spend Rs. 3,200,000,000 a year in their National Health Insurance Scheme alone—hard-headed business that Britishers are. One can never over-emphasise the fact that the most effective means of increasing the national productive capacity is improvement of public health.

Of late, suggestions have been put forth that Insurance Companies should be made to spend a part of their profit for Health Projects. This will indeed be a step in the right direction and it is in their interest that this should be so for obvious reasons. Now that some governments are running their own Insurance Business in our country, this suggestion should be seriously considered.

Bhore Committee Report, our Public Health Bible in many ways, lays down that 15% of the State revenue should be spent on health activities. At present, while Great Britain and America are spending about Rs. 50 per capita, our Provinces are spending per capita a sum which has still to be counted in annas only! No doubt, our national income is much less, but even making allowance for this we have to spend at least Rs. 3 per capita on Health Services.

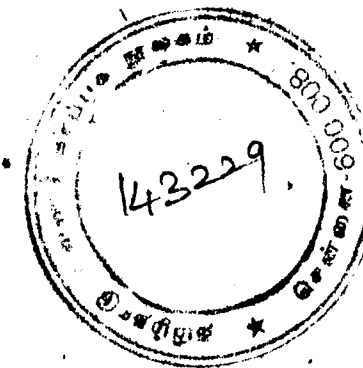
Let me conclude: whether we fully realise it or not, public health has become a profession. And it is only in recent years that the crystals of professionalisation have begun to appear in the amorphous mass comprising the personalia

of Public Health. We have to stem from several professions: Medicine, Dentistry, Engineering, Nursing, Education, Social Work and others. In this critical period of our country's destiny, it seems to me that public health and medicine have a tremendous part to play. They perhaps possess one of the keys that will unlock the door to a brighter future. For, health is something that all men desire and there is no limited supply for which nations must compete. Public Health work carries no threat to anybody, anywhere. Small-pox and tuberculosis have no political ideology. There is no Marxian method of eliminating anopeline mosquitoes as distinguished from a Western democratic method. The laws of Sanitary Engineering do not bear a Russian or an American label. No difference exists between tuberculosis in Canada and tuberculosis in India. It is the same thing in Moscow and Washington and human sorrow is no less poignant in our country than in the other. The world of disease and misery is not divided: it is a common world. In terms of human suffering the world is truly and tragically one world.

The foregoing paper deserves to be read carefully by every health worker, medical or engineering. Major P. Mohamad Ali has realised the importance of team work in public health activities and has rightly appealed for appropriate delimitation of functions of the medical and engineering sections of the Public Health Department without, however, sacrificing co-ordination. We have pleaded in these columns that there should be a single Director of Health Services in the Provinces with a number of divisions on a horizontal line representing the several specialist services. Unless such an organization is brought into existence, the services rendered under the present water-tight compartmentalism, cannot be expected to achieve the desired results. Will our Ministers of Health act in this direction and implement the recommendations of the Bhore Committee in this behalf?

—Ed., P.H.

MADRAS CITY WATER SUPPLY



by

C. Narasimham, M.A., B.L.

Commissioner, Corporation of Madras



The water supply for the City is obtained from the Kortalaray River and its tributaries. A masonry weir 6 feet high has been built across the Kortalaray River at Tamarapakam, about 17 miles north-west of Madras to divert the flood water and lead it through the upper supply channel to the Cholavaram lake and thence through the lower supply channel to the Red Hills lake from which the City supply is drawn. Both these lakes also receive considerable supply from their own catchment areas of about 140 sq. miles in extent. The water supply to the City of Madras is drawn directly from the Red Hills lake. The water from this lake and the Cholavaram lake further north is also used to irrigate about 7,500 acres of wet lands. To meet the increased demand for water for the growing needs of the City, it was found necessary to augment the source of supply. After investigating various possibilities, it was decided in 1940 to construct a dam across the Kortalaray River and form a reservoir at Poondi, 12 miles above Tamarapakam anicut. This reservoir is for impounding the greater flood discharges which normally surplussed over the Tamarapakam

and Vallur anicuts and wasted into the sea. The reservoir is designed to impound 2,500 million cubic feet of water and will have a water spread of nearly 12½ sq. miles. Its storage capacity will be nearly equal to the combined storage capacity of the Cholavaram and Red Hills lakes. The water impounded at this reservoir, known otherwise as *Satyamurthi Sagar*, is drawn into the Red Hills tank through the Kortalaray River upto Tamarapakam anicut and from there through the upper and lower supply channels to Cholavaram and Red Hills tanks.

FAILURE OF MONSOON

The City had plentiful rain in December 1946. Consequently *Satyamurthi Sagar*, Cholavaram and Red Hills lakes were full that year. As there was a partial failure of monsoon in 1947 and as Red Hills and Cholavaram lakes received very small supply, water was drawn from *Satyamurthi Sagar* in 1947 and the Red Hills lake was kept at a fairly high level and the City was supplied with between 23 and 25 million gallons of water per day in spite of the partial failure of the monsoon. As the monsoon failed in 1948 also, the

lake levels in Cholavaram and Red Hills were far below the full supply level and the little water that was available in Poondi has also been brought down. Since the construction of *Satyamurthi Sagar* at Poondi its utility was for the first time proved beyond doubt in 1947 and insufficiency against two successive drought years was also proved now beyond question. It is, therefore, very necessary for the Government and the Corporation to take up immediately the investigation of some other permanent source of supply which would assure the City of an adequate and continuous supply despite the failure of monsoons. Steps have already been taken in this direction and the Council is at present actively considering various proposals including the Krishna-Pennar, Krishna-Buckingham Canal, Arniyar projects. It is, however, a great pity that when a second conduit with a capacity of bringing 32 million gallons extra per day has been constructed over a length of 7 miles between Red Hills and Kilpauk at a cost of nearly Rs. 70.0 lakhs, there is no water to fill even the existing conduit which has a capacity of 24 million gallons per day. The Corporation has aimed at supplying 50 million gallons of water per day and with that end in view constructed a second conduit, imported a third electrical unit at a cost of Rs. 3.5 lakhs and has also taken up the laying of a separate trunk main for South Madras at a cost of over Rs. 20.0 lakhs. The utility of these proposals will be appreciated the moment we have sufficient storage of water in our lakes.

The storage of water in the Red Hills and Cholavaram tanks and *Satyamurthi Sagar* at Poondi as on 1-3-1949 was 902 million cubic feet. With a view to avoid evaporation losses, practically the entire available water in Poondi and Cholavaram is brought down and impounded in Red Hills lake. After allowing for evaporation losses for about 8 months, it is possible to supply to the City only at the reduced rate of about 12 million gallons per day till about the end of

October by which time it is expected that the monsoon will set in. The Corporation is fully aware that a reduction in the daily supply of water from 24 million gallons to about half of it will seriously inconvenience the public but it is helpless as no arrangement is possible immediately to get additional quantities of supply to the city.

HOW TO TIDE OVER?

What the Corporation has, therefore, aimed at is:

To ensure this minimum supply of water throughout the period of drought;

To distribute this water as equitably as possible throughout the city;

To prevent waste as best as it could and to make special arrangements as could possibly be made in order to supplement the protected system of supply by other means; and

To consider actively the question of providing additional sources of supply so that the City should not have to face another water famine whether the monsoons favour us or fail us.

Although the supply is reduced by half even on the basis of 12 to 13 lakhs of population in the city, the present reduced supply will still work out to more than 10 gallons per head. This cannot be considered adequate in normal times but during a water famine of this kind which is the result of failure of monsoons for two successive years, I venture to suggest that if proper use is made, this average 10 gallons per head should be able to meet most of the essential requirements of the citizens. While supply and distribution are in the hands of the Corporation, the use is entirely in the hands of the citizens and if they co-operate we could get through this difficult period with less inconvenience than most people have imagined. I will now briefly tell you what exactly the Corporation has done and is doing:

To economise the use of protected water, the following measures have been adopted:

The public have been requested through the Press and by wide distribution of printed handbills to prevent waste or excessive use of water. They have been particularly requested:

Not to leave the tap open or allow children to play with the tap and waste water.

Not to use water at any time directly from the tap but collect it in a vessel and then use it.

Not to bathe under the tap or wash linen directly at the tap.

Not to keep the tap open while washing your teeth or washing your feet.

Not to keep a tub or vessel under the tap and let it overflow while attending to domestic or other duties.

Not to store water in excess of your requirements and then throw away the excess.

Close the tap the moment you have drawn the required quantity of water.

Shut the tap at once if you see it running to waste.

Make every member of your household, especially the servants, understand that with water, as with everything else, "wilful waste brings woeful want."

Any leakage should be promptly attended to.

The moment you notice a leak in a tap or pipe or any pipe fitting, inform the Water Works Overseer of the division and confirm in writing to the Water Works Engineer.

A leaky tap of the screw-down type can ordinarily be repaired by renewing the washer at a cost of Annas 2 only.

If you see a public tap leaking or running to waste, please close it immediately.

If you see a leak or burst on the roadside mains, please inform the nearest Water Works Overseer and confirm by writing to the Water Works Engineer.

I would request you all to give the widest publicity to these measures and help the Corporation by seeing that you and your neighbours adopt them.

The Corporation itself has restricted supply of Red Hills water for municipal purposes.

It has stopped supply to all bathing fountains and dhobykanas except during certain specified hours.

Completely cut off supply to swimming pools, road works, parks and for washing water tables, etc.

All taps in private bungalows and houses used exclusively for garden purposes have been plugged.

The hours of supply during which high pressure is allowed on the mains have been cut down to about 4 hours in the morning from 5 a.m. to 9 a.m. and 2½ hours in the evening from 4-15 p.m. to 6-45 p.m. During the other parts of the day pressure will be suitably regulated to the barest minimum. There will be some supply in some of the taps in low level areas but there will be no water in the high level areas during low pressure hours. Even the tail ends will get water during these hours if only the public with a view to drawing their entire requirements do not flock in large numbers at the same time at public fountains. If they could spread themselves over the high pressure period of 4 hours in the morning and 2½ hours in the evening, there could be an equitable distribution of water throughout the city. I trust the public will realise that adjustment between the various families depending upon supply from the nearest public fountains will go a long way in each family getting its requirements.

UTILISING WELLS

There are about 14,000 wells in the City. Of these, it is estimated that about 6,000 may yield potable water. If the water in these wells is rendered fit for use, people could use it for all purposes other than drinking such as bathing, washing, flushing, cleaning, etc. With a view to ensure safety of water, the Corporation has sanctioned the employment of sufficient number

of gangs to clean private wells and also to chlorinate them regularly until the water supply position eases. The public are, therefore, requested to take the fullest advantage of this well-cleaning scheme, have their wells cleaned and maintained regularly. The utility of a well depends upon its use. If water is drawn regularly from a well, the quality of water gradually improves.

The Corporation has obtained through the kindness of the Military Department permission to use two of the wells in the Seven Wells compound. It has erected overhead tanks and is supplying water from these wells through a number of taps opened in Mint Street, Old Jail Road and Seven Wells Street. Similar arrangements have been made near a well in Nagappa Iyer Street, Triplicane, and arrangements are afoot in several other places where owners of private wells have been good enough to throw them open for public use. The Corporation wells in Natesa Mudaliar Park, Theagaraya Nagar, Peoples Park and Robinson Park have all been fitted up with pumps and are supplying water for municipal and public purposes.

The restricted hours of supply has naturally affected the supply of water to public conveniences in most parts of the City. Consequently, the Corporation is sinking wells wherever possible, fitting up overhead tanks and electric or oil pumps as the case may be. As adequate water supply is essential for the maintenance of public conveniences in a sanitary condition, these arrangements will be of permanent benefit to the users of public conveniences. In cases where wells cannot be sunk, water will be supplied from the nearest private or public well either through water tankers or through carts for washing public conveniences and water tables. The owners of private wells have been requested to permit the Corporation workers to draw water freely for these purposes and I trust they will help the Corporation during this emergency and thereby assist it in keeping the city clean. In certain

areas like Madumanagar, Siruvellur, Ayanavaram, etc., wells do not yield potable water. Consequently the Corporation has got to make certain arrangements to supply drinking water to these areas through lorries. Six water tankers of 800 gallon capacity each will be put to use to supply water to all such areas, both morning and evening, for drinking purposes. These arrangements are likely to cost the Corporation about Rs. 3½ lakhs and the Government have been requested to sanction half the cost as grant as the Corporation by itself cannot meet this entire expenditure from its poor finances.

SUGGESTIONS TO CONSERVE WATER

Some of the citizens have been writing to me making various suggestions. Some suggested that I should immediately stop scouring the mains as they consider it a waste of valuable Red Hills water. Scouring has been restricted to the minimum absolutely necessary in order to remove silt accumulation in the mains and to make the water odourless as far as possible. It cannot, under any circumstances, be given up, if water should not only be free from smell but also safe for drinking. Some others suggested that wells should be sunk in the foreshore as there is every likelihood of potable water being tapped. The quality of water which we have so far been able to obtain from the three wells sunk near the swimming pool on the marina is such that it is only fit for non-drinking purposes. It is possible that drinking water could be tapped in some other places on the foreshore but the real problem is how to make such supply available to the citizens in this present emergency. Even if overhead tanks are constructed at a few places along the Marina and water is pumped from the wells into these overhead tanks, people have to walk long distances to draw water from these tanks. The utility of such a proposal is extremely doubtful as there are many wells nearer home supplying water at least as good as foreshore we-

water, if not better. Some others think that sea water itself should be utilised by chemically converting it into potable water. They forget that the City is not fortunately faced with such a hopeless water famine as to think of converting sea water into drinking water at enormous cost. Even at the present supply level of 14 million gallons per day, it works out to more than 10 gallons per head and what is required in addition is water for bathing, flushing, washing, etc. When there are 14,000 wells in the City nobody could seriously suggest that we should abandon these wells near at our doors and think of chemically curing sea water and transporting it all over the City at great cost.

There are some who think that the supply of Red Hills water to factories and industrial concerns should be cut off. They forget that these industries have been supplying some of our essential requirements and providing also sustenance for thousands of workers' families. Take, for instance, the Buckingham & Carnatic Mills. Over 16,000 workers are employed and the Mills consume on an average 5 lakhs of gallons of water per day without which they cannot produce cloth of the present varieties. They have no other alternative scheme ready which could be executed within the course of a few months to supply such a large quantity of water. Their only alternative would be, as they have informed me, to reduce the number of workers and production as well. The effect of reduction of water supply would be

the same in the case of other concerns also, viz., fall in production and retrenchment of workers; results which no one would wish or contemplate with equanimity. This is, however, not to say that they should be allowed to use water as they have been doing in the past. The same restriction which has been imposed on domestic services has also been imposed on these concerns and they have also cut down their requirements by about 30 to 40 per cent. This is all that could be expected in the interest of both the citizens as also in the larger interests of the country.

The Corporation is always prepared to act upon any useful suggestions which the public may make and would be grateful to receive such suggestions. I have, during my talk to you, this evening, mentioned the many ways in which the public could and should co-operate with the Corporation in economising the use of water and reducing waste. I trust the public will appreciate the present difficult position and give us their best cooperation and also take upon themselves the duty of seeing that their neighbours also cooperate. May I close with a prayer and request you all to join with me in praying that Madras which was accustomed to having rains occasionally even in the months of May and June may be blessed this year with some showers so that during at least the hot months of the year the Corporation will have the satisfaction of supplying adequate water and make living in the City a little more pleasant and healthy too?

(Courtesy, A.I.R., Madras.)

BCG—A STATEMENT

by

'TWELVE WELL-KNOWN DOCTORS IN INDIA'

This statement was issued from New Delhi. The signatories are: Dr. B. C. Roy, Premier of West Bengal, Dr. Jivraj N. Mehta, Premier of Baroda, Dr. K. S. Ray, President of the Indian Medical Council, Dr. K. C. K. E. Raja, Director-General of Health Services, Government of India; and the eight members of the Standing Technical Committee of the Tuberculosis Association of India, namely, Dr. R. B. Billiomoria, Dr. A. C. Ukil, Dr. R. B. Lal, Dr. B. V. Yodh, Dr. K. Vasudeva Rao, Dr. K. L. Wig, Dr. S. K. Sen and Dr. P. V. Benjamin.

"BCG vaccination was started in India in August, 1948, and has been in use at Madanapalle in South India and at Delhi in North India since then. Plans are being made by the Government of India to extend the use of this vaccine to all Provinces and some of the States in the near future.

In the Press Communique published by the Government of India in June, 1948, a review was made of the tuberculosis position in India and the place that BCG vaccination can have in the campaign against the disease was discussed. Since then there have been a number of articles in the Press, some advocating the use of the vaccine and others raising doubts in the minds of the people regarding the efficacy of BCG vaccination and its harmlessness. Doubts have also been expressed as to whether the Government and the people will be led into a false sense of security against the disease because of the vaccination and thereby neglect attention to the other aspects of the control of tuberculosis, such as improvement of environmental hygiene, housing, nutrition and sanitation as well as a direct attack on the spread of the disease through the isolation and treatment of

infective cases by the provision of an adequate number of clinics, hospitals, sanatoria and after-care colonies. Such doubts were expressed when smallpox vaccination was first introduced, but in the end truth prevailed. In view of the likely public criticism, we felt desirable to place before them our considered views on BCG vaccination.

ITS ORIGIN

BCG vaccine (*Bacillus Calmette Guerin*) was developed by Calmette in Pasteur Institute, Paris, after 13 years of careful experimentation and work. It was used on human beings in 1921. Proper technique and dosage have been carefully worked out by Calmette and workers from other countries since that date. By the end of 1948 more than one million people were vaccinated in Denmark, Norway and Sweden alone. Vaccination has also been practised in other countries like the U.S.A. Canada, South America, Russia and more recently in most of the other European countries and it is estimated that over 10 million people have been vaccinated up to date all over the world.

As the result of careful study of the literature on the subject we are convinced (1) that BCG vaccination is efficacious and that, if it is carried out on a mass scale, it can be expected to reduce tuberculosis mortality in India very considerably; (2) that it is entirely harmless; and (3) that segregation of the vaccinated is not essential.

ONE OF MANY MEASURES

We are also convinced that BCG vaccination is only one of the many measures to be employed for the control of tuberculosis and that other steps such as improvement of the standard of

living including better housing, improved sanitation and adequate nutrition are equally necessary. The establishment of institutions for the early diagnosis and treatment of tuberculosis, and particularly for the isolation of infected tuberculosis cases is also of great importance. Paucity of funds and lack of trained personnel stand in the way of a rapid advance in the carrying out of these measures and the place of BCG vaccination in the tuberculosis campaign for promoting the resistance of the people against the infection becomes all the more important. We believe that, if wholehearted support is given for the popularisation of this vaccine, a very real

advance in the control of tuberculosis would be achieved at a comparatively cheap cost. We would at the same time stress the importance of simultaneous adoption of other measures.

It may be noted that even in Western countries with a high standard of living and an advanced state of improved environmental hygiene and better nutrition, it has been found necessary to adopt BCG vaccination as one of the anti-tuberculosis measures to be promoted actively by the Governments concerned. The need for using the vaccine in India as an important measure to supplement other steps taken to fight the disease is all the more important.'

BCG—IN THE U. S. A.—ITS EFFICACY

We publish, with pleasure, a statement made by Dr. Edgar Mayer, Tuberculosis Expert for the WHO, South East Asia Region. We are unable to reconcile this statement with the notes furnished in *Tuberculosis Clip Sheet*, which run as under:

"Vaccination with BCG does not provide complete protection against tuberculosis and, until further controlled studies are conducted, cannot be recommended for the general population. However, since it appears to provide some degree of protection, its use is recommended for members of groups constantly exposed to tuberculosis, if they have a negative reaction to the tuberculin test."

"Vaccination with BCG must not be regarded as a substitute for approved public health measures nor can the vaccination of the general population be recommended at the present time except for carefully controlled investigative programme, several of which are now under way."

The National Tuberculosis Association, which has been rendering yeoman service in the fight against tuberculosis, can be relied upon to cater correct and up-to-date information to the world.

We are, indeed, puzzled why there should be such conflicting information on the subject!

—Ed., P.H.

My attention has been drawn to statements in the Indian Press asserting that BCG vaccination is not being used in the United States of America on an extensive scale because further experiments as to its efficacy and harmlessness have to be carried out. As an American working extensively and intimately in the field of tuberculosis for over 35 years, and as a Professor at Cornell University, New York City, having taught tuberculosis for many years, I can state the following:

- (1) BCG is a perfectly harmless vaccination and cannot produce tuberculosis.
- (2) It has been shown in America as in other countries that it markedly reduces the development of tuberculosis and tuberculosis mortality.
- (3) It is being regularly employed to-day on a large scale in New York and in many other parts of the United States. It is not being used in the United States on a still larger scale only because tuberculosis has been kept under control there by other methods introduced into the country, even before the discovery of BCG vaccine.
- (4) Conclusions of the world tuberculosis experts at present are that in highly infected areas such as postwar Europe, India, China, etc., BCG vaccination should be used on a mass scale as one of the most potent agents against fresh tuberculous infection in non-infected people. The urgency is greater because other measures necessary to the control of tuberculosis cannot adequately be introduced in a short time because of limited resources.

A CHALLENGE

TO 'THE TWELVE WELL-KNOWN DOCTORS IN INDIA'

An open letter to the 'Twelve well-known doctors in India' is signed by Jer. M. Madan, P. Shiva Rao, A. T. K. Mendon, M. P. Mani, E. M. Hughes, Charlotte B. Sen Broeck, Dilip R. Kothare, S. D. Mistry, N. A. Subramaniam, Lakshmi N. Iyer, B. S. Vakil, R. S. Swarna and others.

Why is it that these 'twelve well-known doctors in India' have not come forward with a categorical reply to the issues raised in this letter? The absence of a reply to this challenge is indeed, intriguing!

—Ed., P.H.

We understand from several of the newspapers of India of the past few days that you are convinced "that BCG vaccine is only one of the many measures to be employed for the control of tuberculosis" and that if it is "carried out on a mass scale it can be expected to reduce tuberculosis mortality in India very considerably." We appreciate that no doubt the precipitous commencement of this mass vaccination of students with tuberculosis virus in Bombay has been done with the motive of human service—but as intelligent citizens with the good of our children and our country at heart we feel it necessary to put forward the following questions and observations with the expectation of adequate answers being forthcoming.

In "The National Standard", February 21, 1949, it is stated that Bombay doctors are "actively co-operating with the Government in the compulsory use of this anti-tuberculosis vaccine." No other Bombay paper seems to mention the matter till February 22, "The Times of India", (p. 5) gives confirmation that the previous day the "campaign" was "launched when about 600 students of the V. J. Technical Institute were vaccinated." In view of the above the following facts and queries arise:—

- (1) This "campaign" was "launched upon the public without proper warning or preparation of the people in a most arbitrary manner. Is it presumed by those behind it that there are no intelligent or informed citizens; or none deserving education and information along the lines of health and welfare of their children?
- (2) Definite and precise information about BCG vaccine, its method of use, purpose and history have not been given. Merely opinions have been stated sparingly and cautiously. The people and especially parents have the right to be informed with facts 'before' such measures are taken upon their children by the Government or any group of doctors.
- (3) The BCG vaccine and all that pertains to it is still in the experimental stage and it is therefore an outrage to impose it on the people—especially on children! To quote a European authority:—H. Malmros, M.D., Physician-in-Charge, Central Hospital, Oerebro, Sweden: "My material is certainly large, but the

observation period is as yet too short to allow of my definite conclusions regarding the efficacy of BCG vaccination. Investigators from other areas in Scandinavia, however, point in the same direction." ("The Hindu", Feb. 13, 1949).

- (4) Who is standing guarantor of this wholesale vaccination with tuberculosis virus—both the process and its results? There have been horrible disasters because of it in the past—who is the present guarantor for the health and lives of our youth? To be specific: Who guarantees that not more than 14 days elapse between the preparation and administration of BCG vaccine. There was a slip which caused the famous Disaster of Lubec, but discovering this fact did not bring the 72 babies that were killed by it back to life! And what of the following points:—
 - (i) Vaccine must be of standard strength.
 - (ii) There must be controls—
 - (iii) Controls and vaccinated cases should be selected for alternation to eliminate possibility of bias; should have identical follow-up; should come from same locality; should come from similar age groups; should come from similar racial group.
 - (iv) Contact with cases must be maintained.
 - (v) Exposure conditions of cases must be known throughout the study period.
 - (vi) A reliable diagnosis of death. ("The Hindu", Feb. 13, '49).
 How will the few teams of 1 doctor, 1 nurse and 1 attendant cope with these necessities for safety and conscientious

administration—with thousands of vaccinated youths?

- (5) The Disaster of Lubec, Germany, was whitewashed—but its appalling tragedy is recorded in one of the leading medical journals of England: "The Lancet" in a long series of Notices, and in the "Journal of the American Medical Association," for anyone to read who will.
- (6) Are parents to have no say as to how their children's health is to be maintained and treated?
- (7) Has the launching of this campaign been legalized by having the necessary laws passed in the proper manner? "Compulsion" must be backed by law—or has the press made a mistake in stating that it is compulsory?
- (8) Since the safe use of BCG vaccine is a controversial matter even amongst medicos—all over the world—how can even a "bluff" of "Compulsion" be used by any group of them with any justice or right?
- (9) What Law compels us, citizens of Free India or our children, to be injected willy-nilly with tuberculosis virus?
- (10) Experienced doctors in the U.S.A. say:— "Vaccination with BCG must not be regarded as a substitute for approved public health measures, nor can vaccination of the general populace be recommended at the present time except for carefully controlled investigated problems" (National Tuberculosis Association, N.Y., Jan. '49). Are Indian doctors so much more experienced and sure of themselves that they dare do exactly what is warned against by American doctors?
- (11) Who is paying for this "campaign"? Even if at "comparatively cheap cost" are public funds being used for this

questionable medical effort? If so, they would be far better spent on sanitation and other "approved public health measures" which would not only eliminate tuberculosis but many other diseases at the same time!

(Free Press, February 23, 1949)

NO PRECAUTIONS TAKEN

(12) Dr. B. Patel, Secretary of the BCG Vaccination Committee of Bombay, is quoted as stating that the under-nourished could be safely vaccinated.

What about those who may, unknown to themselves (or the vaccinating doctors), be suffering from heart disease, nephritis, diabetes, epilepsy, military tuberculosis for whom even "diagnostic injections are dangerous" as stated by another American authority, Prof. Maurice Fishberg, M.D., in his Book "Pulmonary Tuberculosis"?

Evidently no precautions are being taken to ensure that people suffering from these conditions will not receive the BCG vaccine? Also if any such should die after injection it would no doubt be "supposed" that they had succumbed to the disease and not its activation by the BCG injection.

In closing we would draw pertinent attention to the article by Mr. A. V. Raman, Editor of "People's Health" printed in the "Hindu" (February 13, 1949) before quoted, Madras, has also "launched" a BCG campaign on the uneducated and uninformed people—but protests are being made there also—we will hope not too late to somewhat stem the tide of this dangerous movement before it spreads over the whole country.

(Bombay Chronicle, dated 25-2-1949)

BCG—A SURVEY OF U.S. MEDICAL OPINION

From the special Correspondent of The "Indian Express." WASHINGTON, FEB. 25.

After 20 years' careful appraisal in the United States, many doctors apparently are ready to endorse the French discovered 'Bacillus Calmette Guerin' as a potential combatant of tuberculosis.

A large factor in this trend of thinking has been the experiments of Dr. Joseph D. Aronson of Henry Phipps Foundation, Philadelphia, and special physician with the Bureau of American Indian Affairs.

Tuberculosis is one of the greatest causes of death among American Indians living on reservations. Aronson reported that the doctors of the Bureau gave BCG to about 1,550 out of a total of 3,007 Indians in 1935. Tubercular test showed all these persons were tuberculosis-free at that time. Aronson told the Tropical Medicine Congress last May in a report, later published by the U. S. Department of the Interior, that regular checks showed 55 deaths—only six from tuberculosis among the vaccinated group. There were 108 deaths—52 from tuberculosis—among the group not vaccinated. The Department of the Interior, which supervises the Indian Bureau, observed, "Immunity produced by BCG vaccine has persisted at a rate in excess of 90 per cent. and, in this respect, compares favourably with the rate by small-pox vaccination."

The Department announced in September that a crew of its American Indian Affairs Bureau doctors had just then finished giving BCG to 250 out of 600 examined and tested near Point Barrow, Alaska, and 74 out of 466 others near Sitka and Wrangell, Alaska. The small percentage of the group vaccinated presumably gives a clue to the prevalence of tuberculosis among Eskimos and should give special weight

to the results, if successful. But the difficulty in diagnosing tuberculosis and the relatively slow progress of the disease make any experiments a long extended process.

PUERTO RICA'S PLANS

Former Puerto Rican Commissioner of Health, Dr. Antonio Fernos Isern, said recently that it was this, plus the U.S. doctors' normal demand for proof positive which has delayed the acceptance of BCG. But Puerto Rica—U.S. territory, where tuberculosis afflicts estimated 40,000 to 50,000 out of a population of two million—recently announced plans to vaccinate all school-age children with BCG beginning this year.

This campaign will be launched under the auspices of U.S. Public Health Service. This indicates the U.S. Public Health Service has at last become willing, in substantial number of cases, to endorse the serum which has already been given to an estimated ten million persons round the world since its discovery by French doctors more than 20 years ago.

Dr. Milton Levine, Chairman of the New York City Board of Health Advisory Group on BCG tests, said the work thus far has demonstrated that it is absolutely harmless and does give some immunisation to tuberculosis. For this reason it is valuable particularly in countries where facilities for diagnosing and treating tuberculosis is limited. "About 10 million persons, throughout the world have been given BCG and there has not been a single death attributable to BCG vaccine."

IT DOESN'T KEEP

"There is much yet to be learned about BCG. For instance, we know it does give some immunity, but we don't know how much or how long it lasts. The present vaccine starts losing potency immediately after it is produced and is good for only about 10 days. Much work will be necessary to stabilise BCG so

that it can be transported long distances or stored for future use. The World Health Organisation is doing good work with BCG and will help nations like India in setting up facilities to produce BCG vaccine."

Dr. Sol Roy Rosenthal, Director of Tuberculosis Preventive Clinic of the Chicago Municipal Tuberculosis Sanatorium and United States Public Health Consultant in Tuberculosis Division, said: "I brought back from Paris BCG vaccine 14 years ago and have been experimenting with it since. In a group of 1,400 cases vaccinated, only one death occurred from tuberculosis—a child whose vaccination did not effect. In a similar group of 1,400, not vaccinated, seven deaths occurred. These cases came from protest districts in Chicago where there is a high rate of tuberculosis. At present we have 11,000 cases under study, half of which is not vaccinated. The vaccine is not yet a panacea. It is as effective as any other vaccine. The following principles of preventive medicine should be observed to obtain the best results. First diagnose the disease and locate it and then isolate it, then use vaccine as secondary measure."

Andrew C. Ivy, Vice-President of the University of Illinois, said, "Vaccination against small-pox has abolished the pest house. Vaccination against tuberculosis could, in time, abolish sanatoriums."

Frederic Tice, Professor Emeritus of Clinical Medicine, University of Illinois, said: "It is far better to prevent tuberculosis than cure it and my conviction is that BCG is the best agent for preventing it, produced up to this time."

The Emeritus Professor of Pediatrics, Northwestern University, said, "BCG is approved by immunologists and clinicians of high reputation and reliability both here and abroad. Prophylactic inoculation material should continue to be produced and administered with caution and under expert control."

Robert A. Black, Emeritus Professor of Pediatrics, Loyola University, said: "At present the use of BCG is the safest and most economical method of tuberculosis control from nursery through high school group."

(The Indian Express, Feb 27, 1949.)

"STRAY INDIVIDUALS"

So much has been said recently by and on behalf of the Government of Madras in respect of the introduction of BCG vaccination on a mass scale, that in reverting to the topic we do not feel called upon to offer an explanation. Indeed after studying exhaustively the literature made available by the Government we were wondering whether we were mistaken in our inference that in spite of all the virtues claimed for the vaccine, the process being still in an experimental stage, the Government should show caution. We therefore contacted our special correspondents abroad to keep ourselves informed of the latest about BCG inoculation. Some despatches have come, some are yet to come. But in what has been published there is ample material to confirm our view. No doubt the Health Minister of Madras Government has not only cited the opinions of the Tuberculosis Adviser to the Government of India and eminent doctors like Dr. B. C. Roy, the Director-General of Health Services and the President of the Indian Medical Council, in support of his contention but has further dismissed the dissentients as "stray individuals." Surely the doctors that have expressed doubt about the feasibility of adopting BCG inoculation on a mass scale without sufficient preparatory work are at least as well intentioned as its advocates; more than twelve doctors, in a joint statement from Bombay, have questioned the thesis of Dr. B. C. Roy and others, and they too cannot be dismissed as "stray individuals."

Since however the Health Minister treats British experts as conservative and accepts the

Americans as not so bad, we shall confine ourselves to American expert opinion for the present. As Mr. A. B. Shetty has quoted with avidity the opinion of the Tuberculosis Adviser to the Government of India, he might be disposed to extend the same consideration to the U.S. Public Health Consultant and Director of Preventive Clinic, Municipal Tuberculosis Sanatorium, Dr. Sol Roy Resenthal who says: "The vaccine by itself is not a panacea. It is as effective as any other vaccine. Principles of preventive medicine should be observed to obtain the best results—the disease must be diagnosed, located and then finally isolated. Then the use of vaccine is only a secondary measure." The New York expert, Dr. Milton Levine, says: "There is much yet to be learned about BCG. We do not know how much or how long it lasts." And when, to this, is added that normally the vaccine retains potency only for ten days, the necessity to stabilise its quality for transport over distances and storage for future use is plain. Moreover, the desirability of ensuring health conditions in slums and cheries, whence come many children in the Corporation Schools and other institutions to which the inoculation process is proposed to be extended, cannot be ignored. Whatever might be said by way of propaganda for the innovation, cautious people who do not subscribe to a gamble with the nation's health are still willing to be classed as conservatives rather than be dubbed reckless saboteurs. We still believe that the Government must hasten slowly so that what is sought to be gained may not be lost in the process of gaining it.

The campaign has been launched in Madras precipitately and in the most arbitrary manner, without sufficient warning or preparatory work. Neither the process nor the result was described or explained; only certain opinions were quoted sparingly and cautiously. Surely the parents have a right to be told about these beforehand instead of being suddenly confronted with the choice overnight. Who, for instance, ask the

twelve or more doctors from Bombay, stands guarantor for the health and lives of our youth? Who indeed guarantees that not more than 10 days elapse between the preparation and administration of the vaccine? Even granting it is all for the good, can vaccination be undertaken except in carefully controlled, investigated cases? Are the Indian doctors who have plumped for it more experienced than, say, the American doctors or the British to pronounce an opinion without further thought or experience? Has the Minister for Health ever thought that even diagnostic injections may prove dangerous (as stated by another American authority, Prof. Maurice Fishberg, M.D., in his book "Pulmonary Tuberculosis") to persons who may, unknown to themselves (or the doctors who give the inoculation) be suffering from heart disease, nephritis, diabetes, epilepsy, etc. From a propaganda sheet on BCG vaccination printed in Madras and issued over the name of "United Nations International Tuberculosis Campaign in India" we notice that the tuberculin test is done through injections of tuberculin solutions of varying strength. What precautions have the Government taken to see that people suffering from the above conditions will not receive these injections?

These questions cannot be dismissed as being raised by "stray individuals," by any responsible Minister or doctor interested in preserving the lives of the public who might, out of ignorance or cupidity, be willing to offer themselves for inoculation. The Government must concede that those who raise doubts are equally interested in reducing the incidence of tuberculosis; only, they are more anxious to see that rash experiments are not launched with regrettable consequences. So long as medical opinion is divided, the Government must defer their plans. The doctors who have the courage to differ are entitled to be heard as sound and sincere judges of what is proper and expedient even if they are less fashionable.

(The Indian Express, March 4, 1949.)

BRITISH MEDICAL OPINION DIVIDED ON BCG

(From the London Office of The "Indian Express")

Although the value of BCG as a protection against tuberculosis appears to have been established in Scandinavian countries, where vaccination is compulsory, there is a need for group experiment in India to study its effects before mass inoculation can be generally recommended. The success of BCG in Scandinavia is largely due to the fact that primary infection in those countries does not occur until the age of 18–20 years, whereas in India (and in Britain) primary infection occurs at a very early age. Since the effect of BCG is to produce primary infection artificially the value of using it on a large scale in countries where large numbers of the population have a tendency to inherit or to acquire at an early age, natural primary infection, must be dubious, and can only be demonstrated after prolonged study of specialised cases.

This is the general opinion of prominent medical men in Britain who were asked to comment on the scheme of mass inoculation recently inaugurated in Madras and similar schemes which are being put through in Bombay, Calcutta, and elsewhere. Many of them were not personally or sufficiently acquainted with the standards of living, health, nutrition and sanitation in India to express any definite opinion, but there was agreement that one could not safely apply to India the data and statistics which had been obtained after years of laborious research in Europe and America and expect the results (which are still the subject of controversy) to be the same.

"In Britain, as in America, the medical profession is divided into two camps on the question of the efficacy of BCG", said one well-informed expert giving the "standard British view" on

the subject. "Half of them think that BCG is first-class, that its value has been proved and that it should be generally applied. That, incidentally, is the view taken by the World Health Organisation of UNO who are vaccinating millions of people all over Europe and Asia. The other half take the view that its efficacy has not yet been proved.

"It is certainly not true to say that BCG is in its experimental stage. It passed that a long time ago. The critical point is, are the statistics on which the value of BCG is based open to criticism? In other words, would we have got much the same results in tackling tuberculosis if BCG had not been used?"

British health authorities would appear to have been impressed by the progress in combating the disease made in Denmark, Sweden and other countries, but they are proceeding cautiously. A committee of medical experts has been investigating into the subject over the past year, and as the Minister of Health, Mr. Bevan, announced in the House of Commons a few months ago, it is proposed shortly to make arrangements whereby BCG will be made available only to selected groups of the population—nurses, doctors and patients under special treatment.

The scheme will be on an entirely voluntary basis, there will be no propaganda campaign as in the case of diphtheria or small-pox, and it will be administered under expert supervision, TB. specialists will be authorised to use the vaccine at their own discretion.

The vaccine will be imported from Denmark because it is the Danish "strain" of vaccine for which favourable claims have been made.

"The degree of immunity conferred by BCG", said another doctor, "is uncertain, particularly in Britain. We are, therefore, not justified at present in recommending its general and indiscriminate use."

To understand the world-wide controversy which rages about the value of BCG it is necessary to understand some of the peculiarities of the disease against which, it is claimed, BCG can afford protection. Tubercular diseases vary in intensity and incidence from country to country. In no two countries are conditions exactly the same. Tuberculosis as known in children and very young people has very different manifestations and significance from the disease as it develops in adults. Children and young people get what "primary infection"—which is absolutely harmless unless adverse living conditions bring about complications—and adults get the much more serious variety known as "Bronchogenic Infection."

A person may suffer for years from primary infection without knowing that he has it. Autopsies carried out on people who have lived to a ripe old age and apparently in good health have revealed extreme calcification of the lungs which, in another person with less resistance to the disease and living in less healthier surroundings would have brought on death many years earlier.

In England, primary infection, generally mild and seldom resulting in serious complications, is contracted by 93 per cent. of the child population. It very often passes and heals without being noticed.

In countries like Sweden, on the other hand, primary infection is very rare until the age of 18 or 19 or even later. In countries like India, where conditions against the growth of TB are not favourable, primary infection can be very dangerous and serious complications are common.

If BCG can induce an artificial primary infection and thus strengthen the resistance of a non-infected subject to the sources of disease around him, why, it may be asked, is there any controversy about its use? The critical school of opinion answers that the use of BCG has its attendant dangers, and that there is not yet

sufficient evidence to prove that the dangers are offset by the favourable results which can be attributed solely to the use of the vaccine.

SEVEN CRITICISMS

There are seven main criticisms of BCG, none of which singly are considered sufficient to reduce its value but which taken altogether, provide a formidable argument against it.

1. BCG is a live vaccine, and ought to be used within a week of its preparation. This means that very great care has to be taken in its preparation and distribution to ensure that a high proportion of the organisms are alive at the time of injection.

2. The virulence of BCG is not standardised. This means that if a strain that is too virulent is used it can be harmful; if it is not sufficiently virulent, the degree of protection will be reduced.

3. If the vaccine is injected too deeply, serious ulceration may occur at the site of injection in a high proportion of subjects and persist for weeks or months, sometimes accompanied by suppuration of the regional lymphatic nodes. Even if the injection is made strictly into the superficial layers of the skin, a small local ulcer may normally be expected to develop. The other mode of injection, by multiple puncture has not been sufficiently reliable to justify its adoption.

4. Infants of tuberculous mothers must be separated at birth, or, if taken away at a later age they must be separated for at least six weeks to exclude the possibility of their having already acquired tuberculous infection by the natural route before they can be vaccinated.

Answering this fourth criticism in an article in the *British Medical Journal*, Arvid Wallgren, Professor of Pediatrics, Royal Caroline Medical Institute, Stockholm, pointed out that this was not a disadvantage exclusively confined to BCG.

"Does any physician of our day permit a tuberculin-negative infant or a child to remain in

an infectious home in the presence of a case of open tuberculosis if there is any possibility of segregating it," he asked. "In Sweden this would be branded as almost criminal and would undoubtedly lead to an admonition from the Medical Board. The difference between BCG-vaccinated children and non-vaccinated children is that the former may return to their infectious homes when the vaccination has taken, while the non-vaccinated must stay away while the source of infection remains.

5. After vaccination, children should be separated from their infected parents for two to three months to allow a reasonable degree of immunity to develop.

6. Infants separated in this way and kept in residential nurseries may be exposed to serious risk of cross-infection, and develop pneumonia or gastro-enteritis, either of which may prove fatal.

7. Since the BCG organism die out in the human body, it is desirable to revaccinate the child at intervals to ensure the continuance of immunity.

REVACCINATION

It is interesting to note in connection with the latter objection that in Sweden revaccination is not commonly done. The tuberculin-sensitivity lasts up to ten years (although it may only endure in some cases for as little as three years) but it is felt that protection has been given during the most susceptible period of childhood, which are the crucial years.

When it comes to facts and figures, opponents of BCG maintain that the claims made for it have not been proven. Leading exponent of the critical school in Britain, Prof. G. S. Wilson, M.D., F.R.C.P., D.P.H., Director of the Public Health Laboratory Service of the Medical Research Council, in a paper which he read a short while ago to the International Conference of Physicians, said that "the published evidence leads me to the conclusion that, though a strong

presumptive case may be made out for the value of BCG it is not yet convincing enough to justify the whole-hearted acceptance of this agent as a means of preventing tuberculosis in Great Britain."

Prof. Wilson maintained that in all the anti-TB campaigns which had been undertaken in various countries in which BCG had been employed, it was quite impossible to satisfactorily deduce what part BCG had played in reducing infection. He quoted as one of many examples the measures taken by the Swedish authority, Wallgren, early in 1930 at Gothenburg, who vaccinated every infant considered by the municipal dispensary to be in danger of infection from family contact.

"The result was striking," commented Prof. Wilson. "The infantile tuberculosis death rate fell from 3.9 per 1,000 in 1927, the year before this routine was introduced, to 0.3 per 1,000 in 1933—a fall of 92 per cent. But, as Wallgren is the first to point out, it is impossible to assess the part played by BCG in this achievement.

"The infants, for example, were separated from their parents for a variable period of time after vaccination, and in some instances were not exposed to infection till they were a year old. Moreover, the educational work of the dispensary nurses stimulated the interest of the mothers, so that they cooperated in shielding their infants from infection and made full use of the prophylactic means at their disposal. The ensuing fall of 92 per cent. in the infant mortality rate due to tuberculosis was almost certainly greater than any fall that might otherwise have occurred during the years 1928 to 1933. It is fairly safe to conclude, therefore, that the very thorough measures taken by Wallgren were mainly responsible for the result observed, but it is quite impossible to say what part in this result was played by BCG."

After analysing the statistics of an investigation carried out in 1945 at the Cook County Hospital

in Chicago, Prof. Wilson came to the opinion: "The results suggest that BCG vaccination may lead to some lowering in the morbidity and the mortality rates in infants, but without more precise information on the method of conducting the investigation it would be unwise to regard this as more than a very tentative conclusion."

Some very suggestive figures, however, were revealed as the result of experiments carried out over a period of six years from 1935 among North American Indian children and young adults. The subjects, ranging from 1-20 years of age, were divided into two groups. The first group, which comprised 1,550 persons, were injected intracutaneously with 0.1, 0.15 mg. of BCG; the second group, comprising 1,457 persons, were injected with 0.1 ml. of sterile saline.

An initial X-ray film was taken to exclude those with evidence of pulmonary tuberculosis, and the inoculated subjects were re-examined annually by the tuberculin test and by radiography. The expert who read the X-ray films did not know to which group any given subject belonged. Analysis showed that the two groups were very similar in age, amount of exposure to tuberculous infection, and completeness of the follow-up. The following table summarises the results:

GROUP.	No. of Subjects.	No. Developing N.P.T.	No. Developing P.T.	Deaths all Causes.	Deaths from TB
Vaccinated	1,550	9	8	34	4
Non-vaccinated	1,457	48	20	60	28

"It may be questioned", commented Prof. Wilson, "whether the conclusions drawn from these figures can legitimately be transferred to civilised peoples having a higher degree of genetic immunity and exposed, as a rule, to a lower risk of infection. It is, in fact, doubtful whether

A Challenge

the same proportionate degree of protection is likely to be conferred by vaccination in a community such as our own as in a race of people in which the natural history of tuberculosis is so very different."

That BCG had its disadvantages, wrote the influential *British Medical Journal* in a recent editorial, there is no denying, and everyone will demand that the gains from it shall be commensurate We would question the conclusion that there is not enough to be gained by the use of BCG even if its efficacy is proven. Any feasible method that will demonstrably increase resistance to tuberculosis in certain classes of person is surely well worth while. It is possible that to aim at protection from undue exposure to infection would be a better policy, but this is even more difficult than it sounds.

There is a field of usefulness for BCG if the claims made for it are accepted."

It was 25 years ago that the first injection of BCG was given by its discoverers, the Frenchmen, Calmette and Guérin, from whom the bacillus takes its name. They had experimented with ordinary live tubercular bacilli, cultivated in their laboratories for a number of years until they had reduced it to a pretty feeble condition. The progress which they made received a big set-back in the early 1930's when a disaster occurred at Luebeck, in Germany, resulting in the deaths of hundreds of children who had been injected with the wrong strain of bacilli. There was an immediate outcry against the use of this system of vaccination, and popular prejudice against it is still widespread even in Europe and America.

(The Indian Express, March 8, 1949.)

BCG VACCINE

There was a press note by Dr. R. V. Benjamin, Tubercular Adviser to the Government of India, stating that "only those who have tried the vaccine for a considerable time have the right to decide on its efficacy or otherwise." May I know from the learned friend whether the experiments on BCG were carried out on Indian soil with due consideration to Indian conditions or on foreign soil by vaccine experts? Are Indian conditions favourable for mass BCG therapy? In my opinion Indian climate with the present poverty stricken people is not at all suitable for BCG. It will do more harm than good. Healthy diet and hygienic conditions of living can do much good in fighting TB. The results will be better than by BCG. At present the health of Indian children is not at all fit for any vaccine injection, not to say of BCG.

—Dr. PANDIT.

The Free Press Journal, Bombay, dated 21-2-1949.

BCG VACCINATION

There was a time when even to mention the use of BCG vaccination as a protection against tuberculosis provoked violent controversy. This procedure, introduced in France after the first World War, employs as a vaccine an attenuated strain of the tubercle bacillus known as *Bacillus Calmette Guérin* to build up resistance to more virulent organisms of the same species. The lack of controls and of adequate statistical evidence in the early work in Europe made American students of tuberculosis understandably cautious in their acceptance of BCG. Moreover, there was ample evidence that the methods of control already in use in the United States were doing more to control tuberculosis than even its most ardent proponents could claim for BCG vaccination.

In contrast to these findings, Levine and Sackett, who studied carefully the results of vaccinating several hundred New York City infants, concluded that "as a public health measure the routine vaccination with BCG of children from tuberculosis homes is probably of less advantage than removing the tuberculous case from the home."

(Tuberculosis Abstracts, Vol. XX, No. 12).

FROM EVERY WHERE



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., P.H.

PLANNING A SEPTIC TANK INSTALLATION FOR AIRPORT SEWAGE DISPOSAL

—R. B. King.

Public Works, 72, 21-22 and 53 (Sept. 1941.)

Application of design is for airports far removed from sanitary sewers. Installation is based on number of persons served per day, with allowances for increases over period of 10 to 15 years.

Septic tank recommended when maximum flow of sewage is not over 20,000 g.p.d. Tank arranged so that 2/3 of its capacity is available for sludge. Capacity based upon number of regular employees and transients each at 50 and 5 g.p.d., respectively. Capacity should equal maximum 24 hours flow unless in excess of 4,000 gallons. For flow in excess of 4,000 a 12-hour detention period is suggested but with tank capacity not less than 4,000 gallons.

For installations with flows exceeding 10,000 g.p.d., siphon tanks are recommended especially when followed by sub-surface sand filters.

To determine whether sub-surface irrigation, leaching cesspools or artificial sub-surface sand filters are indicated, soil percolation tests are suggested. Included is a table showing bottom areas of trenches and percolating areas of cesspools corresponding to time intervals for water to recede one inch in test pits.

Where sub-surface sand filters are required their design may be based upon a rate of filtration of 50,000 g.p. acre per day using a 30-inch depth of coarse clean sand with 4-inch distributors and underdrains sloped 1" in 10'. The bed should be located to avoid the influence of surface waters. A suitable outlet for the main underdrain must be available.

—J. R. MCCOMAS.

(*P. H. Engng. Absts. Vol. XXIII*)

SEA WATER MADE DRINKABLE TWO CHEMICALS REMOVE SALT

Sci. News Letter, 43, 388 (June 19, 1943.)

"Thirsty men on life-rafts will be able to produce safe drinking water from the sea, thanks

to a new method perfected by the Naval Medical Research Institute at Bethesda, Md., and announced officially by the Navy.

"Developed for use primarily on rubber life-rafts carried on aircraft, the new method utilizes two chemical compounds, the composition of which is not revealed. These two chemicals are compressed into bars of soap size. Four plastic bags, each a quart in size, are needed to perform the chemical reactions that remove the salt and make the water drinkable.

"Under life-raft emergency conditions, 11 times as much drinkable water as chemicals used is obtained.

"The Navy credits the discovery of the process of removing sodium salts from sea water to Lt. (j.g.) Claire R. Spealman and Lt. William V. Consolazio, volunteer specialists, U.S.N.R."—G.M.C.

(*P. H. Engng. Absts. Vol. XXIII*)

THE HUMAN PROBLEM OF URBAN DISPERSAL

In planning a whole series of new towns it is important to remember that one of the chief reasons for dispersing the population in balanced communities of limited size is that we need a physical basis for co-operation of a more constant and wide-spreading kind than the big agglomerations have provided. The political potentialities of the garden city will perhaps in the long run be as important as its benefits for child nurture and for health. For the chief business of the city is to make citizens, that is to give people the discipline of working in groups, and of finding, through wider association with other men, a fuller satisfaction for their own capacities and interests. By obliterating small units of association and administration, we have made it harder to operate over wider areas except by invoking habits of automatism and principles of compulsion which do violence to the very co-operation we are trying to achieve.

(*Lewis Mumford—"The American City" October 1946.*)

CHILDREN IN CROWDED CITY

We know how unintelligent the children are who live in crowded city, among multitudes of people and events, in trains and automobiles, in the confusion of the streets, among the absurdities of the cinema, in schools where intellectual concentration is not required. There are other factors capable of facilitating or hampering the growth of intelligence. They consist of certain habits of living and of eating. Their effect is not clearly known. It seems that overabundance of food and excess of athletics prevent intellectual progress. Athletes are not in general very intelligent. In order to reach its highest development the mind probably demands an ensemble of conditions which has occurred only at certain epochs and in certain countries. What were the mode of existence, the diet and the education of the men of the great periods of the history of civilisation? We are almost totally ignorant of the genesis of intelligence and we believe that the mind of people can be developed by the mere training of their memory and by the exercises practised in modern schools.

(*"Man The Unknown" by Dr. Alexis Carrel*)

INFLUENCE OF WEATHER AND CLIMATE

In view of the fundamental influence of weather and climate on man's food, clothing and shelter, and therefore on his health and happiness, it is not surprising to find that from the earliest times he has taken notice of seasonal variations and that long ago he looked for signs or omens that would foretell the weather, particularly the approach of storms. In an attempt to court supernatural aid in warding off unfavourable weather he made supplication to meteorological deities. Some of the weather signs picked up by man through the ages contain an element of truth; others are mere superstitions. A surprisingly large number of these superstitious notions about the weather still persist. These are slowly giving way to a more scientific

view-point and a better understanding of how a modern weather service functions, its possibilities and its limitations.

(Extract from "Climate and Man" Yearbook of Agriculture—U.S. Dept. of Agriculture—1941)

HOW TO OPERATE AN IMHOFF TANK ?

Here are some points of information that will help to improve the operation of Imhoff tanks, particularly those that are used in the smaller sewage treatment plants. These were outlined by Jerome H. Svore, Sanitary Engineer for the North Dakota State Department of Health, in a paper presented at the annual convention of the South Dakota Water and Sewage Works Conference.

1. Skim the chamber daily. A skimmer made from a large long-handled fish landing net with 16 mesh copper wire screen instead of the network is satisfactory.

2. Squilgee the inner walls and sloping bottoms at least weekly.

3. Break materials loose from the Imhoff tank slope by dragging a chain through the length of the tank using a slow sawing motion.

4. Measure the depth of sludge in the sludge chamber monthly. You can do this by using a small pitcher pump attached to a suction hose connected to a few feet of straight pipe. When you reach the pump level the pump discharge may become black and the pump will tend to choke.

5. Draw sludge whenever soundings reveal accumulations within two feet of the slope. The slope should be black; greyish streaks indicate partial digestion.

6. Draw sludge solely to prevent the liquor of the sludge blanket from breaking through.

7. Keep the scum in the gas vents broken by rodding with a scum hoe, spraying, or pouring water on it.

8. Fill the sludge pipes with water after the sludge has been drawn to prevent caking.

9. In the early part of the summer when active digestion is again resumed because of high temperature, a small amount of lime is often found of value to prevent foaming.

(Extract from "The American City", April, 1946)

A PERNICIOUS BLUNDER

The policy of sweeping clearances should be recognised for what I believe it is; one of the most disastrous and pernicious blunders in the chequered history of sanitation.

I must go even further and ask those who have supported these demolitions as measures against plague whether they have not only been found to fail in the purpose, but, still worse, to be a possible contributory cause of its return. Let them imagine the effect of drawing their sanitarian foot through a crowded anthill upon not only those human ants who are thrust out, but also upon the rats, who are also suddenly compelled to migrate. The effect is that people and rats alike crowd into other already densely populated areas. Must not the increased numbers of starving and struggling rats become increasingly liable to disease; and does not the congested, heaped-up human population become less able than before to keep down the rats and also become more careless of fleas? For, when her old home is taken away, what joy has a woman in the inferior lodgings to which we have now consigned her?

(Sir Patrick Geddes in India)

HINTS ON MAINTENANCE, CLEANING AND DISINFECTION OF RESERVOIRS AND ELEVATED TANKS

Official Bul., N. Dakota Water and Sewage Works Conf. 9, 7-8 (Aug. 1941).

Reservoirs and elevated tanks should be inspected and cleaned frequently and regularly. Reservoir vent screens should be inspected and maintained effectively. Surface leaks and leaks around manholes should be located and repaired.

The ground surface surrounding the reservoir should be shaped and graded to minimize dangers of pollution and present a good appearance. Elevated tanks should be inspected for effective screening of vents and the space between roof and wall plates. Overflow pipes and valves should be examined and tested especially where winter freezing is a consideration. Steel reservoirs must be protected against rust and corrosion. Exterior surfaces should be cleaned and painted with a high-grade metal paint. Interior surfaces should be preserved from the effects of water by a protective coating or other protective measures. When interior protective measures are required, the tank should be drained, allowed to dry, cleaned to a bright finish by scraping, sand-blasting or wire brushing so as to remove all rust and scale, and all loose or defective rivets or construction joints should be repaired.

After repairing, cleaning, or painting, the storage structures should be disinfected before they are placed back in service. If they have been thoroughly cleaned, a chlorine dosage sufficient to produce a residual of 5 p.p.m. should effectively disinfect the units. The exact amount of chlorine in all cases should be determined by test. A table is included giving the amounts of chlorinating compounds required to produce a residual of 5 p.p.m. One ounce (0.063) pounds of Hi-Test Hypochlorites having 70 per cent. available chlorine is required per 1,000 gallons of water for a 5 p.p.m. residual.

—HOMER J. HAYWARD

(P. H. Engng. Abst. Vol. XXII)

HOUSE BUILDING STANDARDS

The Surveyor, 103, 456 (Sept. 22, 1944)

The Planning Advisory Board on Housing in Northern Ireland expressed the view in a report that a satisfactory set of building standards should be enacted to insure proper spending of public money. The Committee considers, the

useful action could be taken by the Government, local authorities, building societies, and contractors to insure these standards.

This action should take the following form: (1) Government: (a) preparation of up-to-date model by-laws; (b) employment of properly qualified architects, engineers, and building inspectors; (c) insistence on proper qualifications in approving said personnel appointed by local authorities. (2) Local authorities: (a) enforcement of by-laws; (b) employment of properly qualified personnel; (c) insistence on proper plans; (d) insistence on a "Certificate of Completion" according to plans. (3) Building contractors: (a) registration of all qualified contractors; (b) more comprehensive training programme. (4) Building societies: (a) greater sense of responsibility insuring that houses purchased through them are properly constructed.

In regard to accommodations and services the committee urges the Government to lay down certain minimum standards. In this report the committee gave a suggested set of standards covering urban and rural houses. They emphasized the fact that these standards were minimum and not ideal and that local authorities and private enterprise should improve upon them whenever possible. When building costs fall or new methods are evolved which reduce costs, they suggest that the standards be revised to fit new conditions.

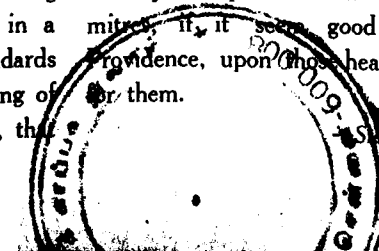
—Jessie F. PILL

(P. H. Engng. Absts. Vol. XXV)

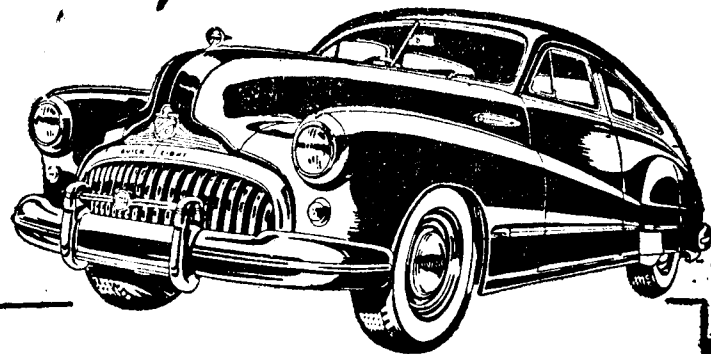
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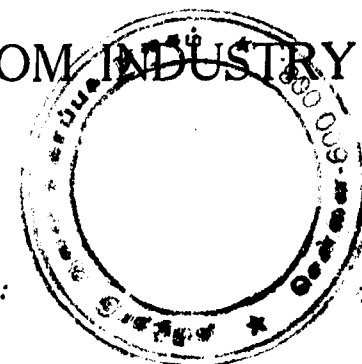
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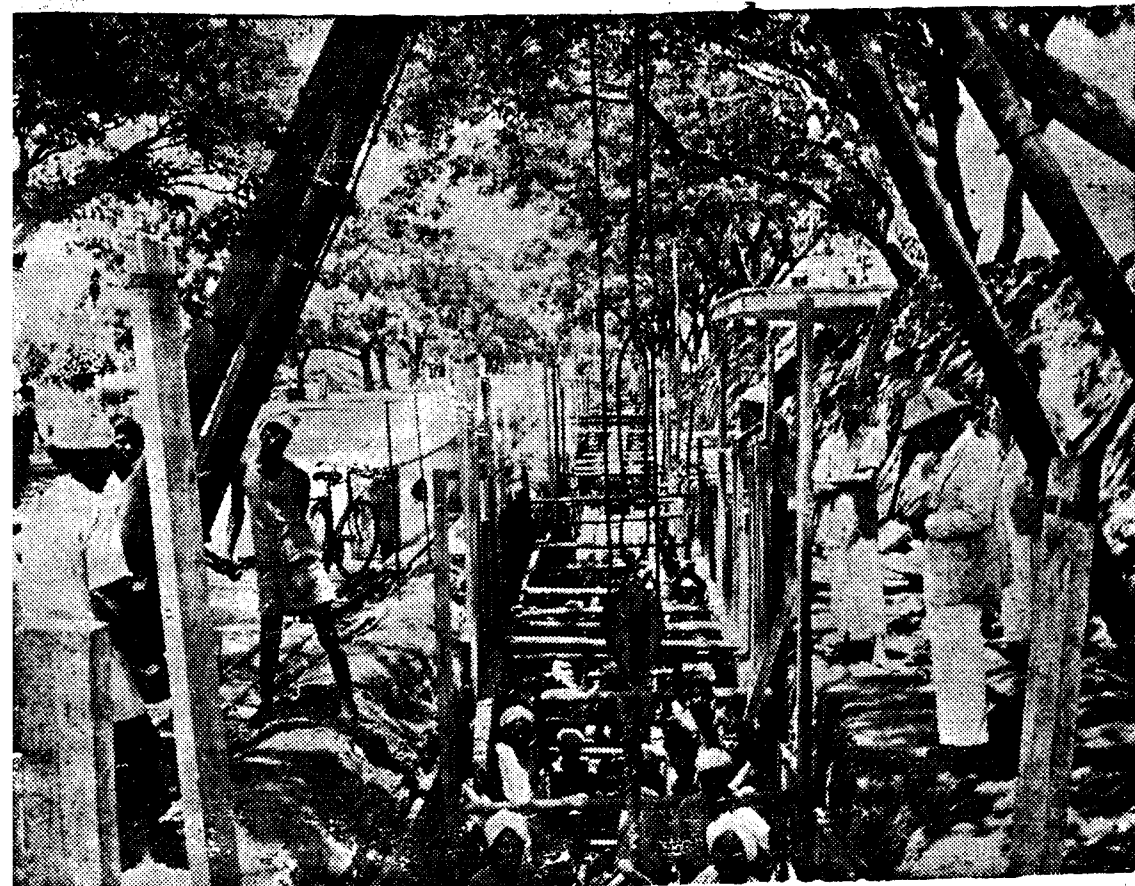


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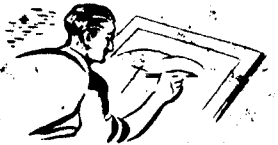
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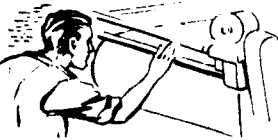
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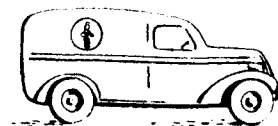
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