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REPORT OF
THE HEALTH SURVEY AND
DEVELOPMENT
COMMITTEE

VOLUME II

Recommendations

PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI
PRINTED BY THE MANAGER GOVERNMENT OF INDIA PRESS, NEW DELHI
1946

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REPORT OF
THE HEALTH SURVEY AND DEVELOPMENT
COMMITTEE

VOLUME II

RECOMMENDATIONS

CHAPTER I

INTRODUCTION

The Health Problem in India

1. A study of Volume I of our report cannot fail to reveal the extent and intensity of the dark shadows in the health picture of the country. It is not for us to apportion responsibility for the somber realities which face us today. It is with the future that we are concerned and if the picture is to be substantially altered for the better with the least possible delay, a nation-wide interest must be aroused and the irresistible forces of an awakened public opinion arrayed in the war against disease. Only a vivid realization of the grievous handicap which is today retarding the country's progress can help to mobilize an all-out effort in this campaign and infuse into it a driving force which will gather and not lose momentum as time goes on. If it were possible to evaluate the loss, which this country annually suffers through the avoidable waste of valuable human material and the lowering of human efficiency through malnutrition and preventable morbidity, we feel that the result would be so startling that the whole country would be aroused and would not rest until a radical change had been brought about.

We refer on page 35 of this part of our report to an estimate which has been made of the economic loss attributable to a single disease—malaria. Admitting that such assessments can lay no claim to mathematical exactitude, the figures, which come from an unquestionably authoritative source, even if approximately correct, are sufficiently arresting to demand something more than passing notice or academic interest.

2. We desire to avoid any semblance of special pleading in the emphasis we place on the paramount importance of health in any plan for the future development of the country. We realize that the most effective progress postulates a closely co-ordinate advance, in which complementary effort in many fields must be correlated, if the national development front is to move forward steadily, smoothly and with the greatest volume of practical achievement.

Nevertheless, we feel that a nation's health, using the term to signify that positive state of well-being in which mind and body are able to function to their fullest capacity, is perhaps the most potent single factor in determining the character and extent of its development and progress. Expenditure of money and effort on improving

the nation's health is a gilt-edged investment which will yield not deferred dividends to be collected years later, but immediate an steady returns in substantially increased productive capacity.

The worker, in whatever field he may be engaged, can only give of his best if his physical condition is not impaired by any disability resulting from the absence of sound health. We feel we can safely assert that a nation's wealth, prosperity and advancement, whether in the economic or the intellectual sphere, are conditioned by the state of its physical well-being.

In regarding national health as the foundation on which any plan of reconstruction must be based if it is to yield optimum results, we feel we are merely repeating an axiomatic proposition. We need no further justification for attempting to evolve a comprehensive plain which must inevitably cover a very wide field and necessarily entail large expenditure, if it is to take into account all the more important factors which go to the building up of a healthy, virile and dynamic people.

A Future Health Plan in Outline

3. At the outset, we must ensure the conditions essential for healthful living in town and country-side. Suitable housing, sanitary surroundings and a safe drinking water supply are the primary conditions for securing such a measure of environmental hygiene as is essential to ensure the pre requisites of a healthy life. Without these our towns and villages will continue to be factories of disease which will help to maintain undiminished the demands on the curative side of the medical services.

The provision of effective means for the early detection and prevention of epidemic and communicable diseases must take a very high place in the organization of public health measures, while improvement in nutritional standards must form an objective as fundamental as any in our basic plan of health development. Nutrition involves not merely a properly balanced but a quantitatively adequate diet, and this opens up avenues of enquiry beyond the scope of our task.

The elimination of unemployment, the provision of a living wage, improvement in agricultural and industrial production, the development of village roads and rural communications, as distinct from the great national highways now projected, are all so many facets of a single problem calling urgently for attention, though it lies outside our province to do more than make a passing but pointed reference to them. We should be failing in our duty if we omitted to stress the composite character of the problem with which we are faced and to point out that a frontal attack upon one sector alone can only end in disappointment and a waste of money and effort.

Nor can man live by bread alone. A vigorous and healthy community life, in its many aspects, must be suitably catered for. Recreation, mental and physical, plays a large part in building up the conditions favorable to sound individual and community health and must receive serious consideration.

4. Turning next to the problems more particularly concerned with the care of the individual, we must start at the very beginning. Every child has the right to be ensured a fair chance of living a normal, healthy life and of contributing eventually, as an adult man

for woman, its full share to the general advancement of the community. This will entail the proper care of expectant mothers and the provision of adequate ante-natal natal and post-natal attention.

The child, during every stage of its journey towards adult life needs suitable care and attention. Its proper nutrition, its health care and health education, its physical development are matters of concern to the State, which must see that where parental efforts are inadequate, the child does not suffer. When the necessity arises for medical attention for the individual, there should be an adequate health service to turn to, from which no question of lack of means should cut him off. The ideal to be aimed at in a National Health Service cannot be more clearly described than in the words of the Ministry of Health in the United Kingdom in setting out its proposals for such a service. "The new service" it says "is designed to provide for everyone, who wishes to use it, a full range of health care. No one will be compelled to use it. Those who prefer to make their own arrangements for medical attention must be free to do so. But to all who use the service, it must offer as and when required the care of a family doctor, the skill of a consultant, laboratory service, treatment in hospital, the advice and treatment available in specialized clinics (maternity and child welfare centers, tuberculosis dispensaries and the like), dental and ophthalmic treatment, drugs and surgical appliances, midwifery, home-nursing and all other services essential to health. Moreover, all these branches of medical care must be so planned and related to one another that everyone who uses the new service is assured of ready access to whichever of its branches he or she needs". This is an ideal which we in this country may well place before ourselves, not as some distant shadowy objective to be approached through leisurely advances if and when conditions are favorable, but as a definite goal the attainment of which, at the earliest possible moment, is vital for the nation's progress and therefore demands an inflexible, concentrated and sustained effort on the part of all, to whom the nation's health and welfare are a matter of vital concern.

Impediments to Rapid Progress

5. We realize however, that there are serious impediments in the way of the early fruition of these hopes. The country's financial resources are limited. The trained personnel necessary to provide a health service of the expansive character we have in mind is unfortunately lacking at the moment, and this limitation is not one which can be removed today or tomorrow. It takes five years to produce a doctor and other key personnel require periods of training which, in many cases, must normally be measured in terms of years and not in months. Moreover social habits, customs, usages and existing standards of living may also call for modification, which in some cases may be profound, before the way can be effectively prepared and the requisite pre-conditions ensured for the proper functioning of the new health order which we envisage. Nor can the ideal of community health be achieved through a bottle of medicine or a surgical operation. It cannot be attained until the individual has learnt to realize that his neighbor’s health is a matter of as much concern to himself as his own, that it is his own efforts which must help to decide the health pattern of the community circle in which he lives and that only a combined co-operative

endeavor on the part of all workers in the many fields of activity in that circle can yield results that are worth achieving. There is no-magic wand to wave these changes into being overnight. The road to final achievement lies through purposeful endeavor, unrelenting toll and co-operative effort inspired by wise guidance and the light of a great ideal.

Long and Short Term Programmes

6. Bearing in mind these limitations we shall draw two pictures. One will depict a comprehensive health plan as we see it in the somewhat distant future, which we hope will give every man, woman and child a reasonable measure of protection against avoid able disease and suffering and adequate medical attention whenever this is needed. The other a short-term plan will present a programme indicating what we consider should be the minimum advance over the first two 5-year periods paying due regard to the restricting factors which must fetter our freedom of action and hinder the pace of progress.

In outlining this programme, we have tried to bear in mind the necessity for tempering enthusiasm with a sense of reality. In the earlier years the lack of sufficient trained staff and of adequate financial resources will inevitably limit the scope of practical achievement. With the initial impediments overcome or reduced, however, the pace of advance should be materially quickened in Chapter III we give a general idea of what we regard as a suitable long-distance health objective to be placed before the country and reached in a period of years. We consider that it is inadvisable to attempt to plan now in meticulous detail for a term beyond the first two quinquennia. The advance of science, the progress of ideas, changes in circumstances and conditions may render out of date any detailed programme drawn up too far in advance. While therefore, we feel it necessary to suggest, in some detail, a programme for the first two 5-year periods, we refrain from the same elaboration in respect of the later years. We shall, however, present in broad outline certain objectives, which should be kept in view during the third quinquennium.

Need for Periodical Review

7. We would lay the utmost stress on the necessity for a periodical review of the position to take stock of what has been achieved and to make such changes in the plan as experience and the course of events may necessitate. The first review should in no circumstances be delayed more than five years from the date on which the plan is initiated.

The Needs of Rural India

8. In these introductory observations we have tried to emphasize the importance of the health programme in any scheme of national planning and it appears to us to be of equal importance to place first things first in that programme. We have taken the countryside as the focal point of our main recommendations, for it is the tiller of the soil on whom the economic structure of the country eventually rests. It is his patient toil that year in, year out, gives the nation its food, such as it is, and the country's main manufacturing industries their raw material. It is from his meager earnings that the larger provinces drew nearly a third of their total

revenues before the war. It is on the produce of his husbandry that the country's balance of foreign trade largely depends. When pestilence and famine sweep through the land it is he who pays the heaviest toll, while it is only the outermost fringe of such public services and amenities as the country enjoys that occasionally comes thin the orbit of his daily life.

We need no further justification for making him the chief beanery under our proposals and if, in the initial stages, our recommendations appear to involve disproportionately heavy expenditure teaching, training and ancillary institutions which, perforce, must located in urban areas, it must be remembered that it is only en these are functioning effectively that we can hope to provide the means of doing a tardy measure of justice to the medical needs the rural areas, where almost 90 per cent of the population of the country lives and works and of repaying the cultivator a debt, which has long been overdue.

The essential aim of our proposals is to ensure the health of the masses of the people through the effective working of the centers are recommending for rural areas.

Our Plan Subject to Local Modification

9. We have no intention of attempting to draw up any rigid or unalterable blue-print for automatic adoption by the Provincial Governments in the country. We are merely suggesting a minimum target and ways and means of attaining it without unnecessary delay. We realize that local conditions, needs and circumstances may call for certain modifications in our suggestions. These, we venture to hope, will be possible within the broad outlines and the essential frame-work of our general plan.

Success Dependent on Co-operation of the People

10. On one point, however, we desire to lay special emphasis. Our view, we shall be building on unstable foundations if we hope to secure any rapid or lasting improvement in health conditions without arousing the living interest and enlisting the practical co-operation of the people themselves. Unless they realize the benefits of the measures proposed and are prepared with vigor and persistence to help in giving them practical and effective shape, success must remain an elusive dream. While purely official effort may by itself not prove entirely sterile, it cannot possibly yield the results which we may reasonably hope to attain with the active enthusiastic and enduring support of the people themselves.

MODERN TRENDS IN THE ORGANISATION OF A NATIONAL HEALTH SERVICE

Aims of a Progressive Health Service

1. A study of the tendencies apparent in some of the more progressive countries of the world in the development of organized health services for the community has been of great assistance to us in our consideration of the problems which lie before us, and a brief review of the general lines of development in such countries will, we believe, prove a helpful introduction to our recommendations. The modern trend in the provision of an organized health service for the community seems to be in the direction of ensuring that such a service satisfies the following requirements: —

(i) that the service should be available to all citizens, irrespective of their ability to pay for it and

(ii) that it should be a complete medical service, domiciliary and institutional, in which all the facilities required for the treatment and prevention of disease as well as for the promotion of positive health are provided. Thus there should be provision for every patient, if his condition requires it, to secure the consultant, laboratory and other special services which may be necessary for diagnosis and treatment. There should also be provision for the periodical medical examination of every person, sack or healthy, so as to ensure that his physical condition is appraised from time to time and that suitable advice and medical aid, wherever necessary, are given in order to enable him to maintain his health at the highest possible level.

Preventive and Curative Health Services

2. The health services may broadly be divided into (i) those which may collectively be termed public health activities and (ii) those which are concerned with the diagnosis and treatment of disease in general. As regards the former, which are directed towards the creation of conditions favorable to healthful living and which embrace many fields in which State action is essential for the provision of the required facilities and the enforcement of legal measures, the responsibility in all countries rests on the public authority. Public health activity, in the early stages, was confined mainly to environmental hygiene but it began to embrace, later, various forms of personal services particularly in relation to mothers and children the school-going population and to patients suffering from infectious diseases, such as tuberculosis and venereal diseases. These developments brought in their train the need for providing adequate facilities for the diagnosis and treatment of disease in relation to these sections of the population as an essential part of the public health programme.

Turning to (ii), *viz.,* organized medical services for the diagnosis and treatment of disease, the practice varies considerably. There exist varying combinations of State and private medical services for the people. For instance, it is understood that most of the hospitals

in Denmark are maintained by public authorities, while in Canada there exists a system of public doctors maintained by municipalities on the basis of a salary or a schedule of fees paid to them by these local authorities. Side by side with the facilities for medical relief for the community provided by the State, relief is also available through private practitioners, medical institutions maintained by voluntary societies and through health insurance schemes on a voluntary or State-aided basis covering limited sections of the population. Even where the bulk of the medical service for the community is given by private practitioners, the need for consultant and laboratory services has been recognized and the development of voluntary "group" practice by doctors or the provision of such facilities by insurance or other organisations providing medical services has become a noticeable feature.

The ferment of ideas arising out of the World War has resulted in an increasing awareness, on the part of Governments and peoples, of the need for measures which will ensure social security, and health protection is becoming recognized as an essential part of social security. The idea that the State should assume full responsibility for all measures, curative and preventive, which are necessary for safeguarding the health of the nation, is developing as a logical sequence.

Social Medicine

3. 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. The causative organism of tuberculosis, for instance, is widely spread in highly industrialized and urbanized communities and yet the incidence of the disease shows a remarkable variation, depending largely on variations in social and economic conditions. The remedial and preventive measures that are adopted in respect of individual patients will largely fail to achieve results, if these factors are not considered and if the necessary steps are not taken to neutralize their harmful effects. A recognition of these facts has led to the emergence of "Social Medicine", which has widened the conception of disease fr6m the narrow view of tissue changes and microbial and other specific causes by the inclusion of social, economic and environmental factors which play an equally important part in the production of sickness. In consequence, social medicine is beginning to develop its own methods of study of the community health problem. In the words of Professor John A. Kyle, "the socio-medical survey, that is to say, the combined social and clinical study of community health and sickness, often with special nutritional and economic assessments and careful sampling and controls", is coming to be accepted as the correct method of approach to such study. Side by side with such surveys controlled experiments directed towards influencing the life of selected communities through the provision of improved health services, better nutrition, a cleaner environment and health education have become recognized as a valuable method of extending experimental practice in the laboratory into the field of community life. This wider outlook has brought into the sphere of social medicine many workers besides the doctor.

They include the public health nurse, the hospital social worker, the nutritionist, the public health engineer and the statistician.

Development of National Medical Services in different Countries

4. The latest developments in the organization of national medical services in a few countries may now be briefly described.

(a) ***Great Britain.***—The scheme for a national health service outlined in the White Paper issued by His Majesty's Government in Great Britain is intended to provide a comprehensive health service to all. Some idea of the degree of comprehensiveness that has been envisaged may be obtained from the following quotation from the White Paper:—

> "It must cover the whole field of medical advice and attention, at home, in the consulting room, in the hospital or the sanatorium, or wherever else is appropriate from the personal or family doctor to the specialists and consultants of all kinds, from the care of minor ailments to the care of major diseases and disabilities. It must include ancillary services of nursing, of mid-wifery and of the other things which ought to go with medical care. It must secure first that everyone can be sure of a general medical adviser to consult as and when the need arises, and then that everyone can get access—beyond the general medical adviser to more specialized branches of medicine or surgery.

It is stated that, under the scheme, individual members of the public "will be able to obtain medical advice and treatment of every kind entirely without charge except for the cost of certain appliances. They will be paying for medical care in a new way, not by private fee but partly by an insurance contribution under whatever insurance scheme is in operation and partly by the ordinary process of central and local taxation." The respective shares of the total cost of the scheme which will fall on the social insurance organization, the taxpayer and the ratepayer are 27, 36.6 and 36. 4 per cent.

(b) ***The Commonwealth of Australia.***—The proposals for the reorganization of medical services in that country embody principles which are indicated in the following quotation from a recent memorandum issued by the Minister of Health, which is entitled "The Health Policy of the Australian Government": —

> **For the people are necessary: —**
>
> The knowledge that they may, as their right, require from the Government such medical and hospital services as they really need without the humiliation of proving their financial status, or the bitterness of accepting charity.
>
> The knowledge that the breadwinner will not have to face a crippling bill for hospital and medical services if he, or any member of his family, suffers a prolonged illness.
>
> It is intended, although this stage has not yet been reached, that every person shall have the right to receive medical advice from a doctor whenever he is ill and without any cost to himself. This will apply in the case of

every Australian citizen, including women and children, and will not be limited by any consideration of the financial status of the patient.

As far as is known, the present position is that a scheme pro-proposed by the National Health and Medical Research Council is under consideration by the Commonwealth Government which, it is understood, has been or is likely to be entrusted in the near future, by the several State Parliaments with the control of national health in co-operation with the States. This scheme proposes a national salaried medical service based on a system of health centers throughout the populated area of the Commonwealth which will be divided into health districts. These would, as far as possible, be also hospital districts in order to co-ordinate the preventive and curative health functions. The scheme will be financed by direct taxation and the co-ordination of the services will be on a Commonwealth-wide basis.

It has been stated that the scheme, whatever form it may eventually take, will be introduced only after the War.

(c) ***The United States of America.***—Careful investigations carried out in America have revealed that adequate medical care is very costly for large sections of the population of that country and that, in many areas, the poorer sections of the community lack suitable medical facilities. There exists no State insurance scheme in the country.

Two developments are said to be in progress for the provision of an adequate medical service: —

(1) The Federal Government proposes to assist States, through subsidies, to expand hospital and other forms of health service, particularly in hose parts of the country where they are most needed.

(2) A second development of great importance is the promotion of co-operative medicine, a form of private medical insurance which guarantees adequate service during times of sickness through the payment of small premia. As a rule the doctors employed in this system are full-time salaried officers and specialist and laboratory services are also associated with it.

An outstanding example of such insurance medical services is the health plan evolved under the inspiration of Henry Kaiser, the ship-builder, and the technical guidance of Dr. Sidney R. Garfield, in the shipbuilding area on the Pacific seaboard of the United States of America in California and Washington States. Through a system of weekly payments complete medical cover has been provided for the worker and all the members of his family.

(d) ***Canada.***—The Canadian approach towards the improvement of the national health is embodied in the draft Bill which empowers the Federal Government to give grants to Provinces in respect of approved health insurance schemes and public health services. The Bill contains three schedules, the first of which gives a list of the grants and the conditions governing them, the second consists of a draft model Health Insurance Bill for adoption by the Provinces and the third lists the different types of health services that are to the maintained. The grants include a health insurance grant a

general public health grant and special grants for work in respect of: tuberculosis, mental diseases, venereal diseases, professional training, public health research and crippled children.

The draft Bill provides that no province can qualify itself for grants unless such Province has made statutory provision for utilizing both the health insurance grant and the general public health grant. It will thus be seen that financial aid from the Centre is dependent on the introduction of the health insurance scheme by the provinces. Every adult (16 years and over) must contribute to the scheme if self-supporting and, if not, the person on whom he is dependent must pay a specified amount.

The Canadian Government definitely prefers a contributory social insurance scheme to a health service financed entirely out of public funds. The Minister of Pensions and National Health gave the following reasons for this: —

"A completely free or non-contributory system may encourage the pauper mentality, may lead to a delusion that the public purse is bottomless. He pointed out that it is "more consistent with the dignity and independence of a man that he shall be enabled to apply for something that he has purchased with his own funds. Under a contributory system, benefit becomes a right and not a. concession". He also said that individual beneficiaries "are kept in touch by their contributions with the actual cost of the services they receive". An improvement in the health of the community will be reflected in a reduction of the contributions while abuse of the system will lead to an increase in contributions. Thus a contributory system should help to secure the co-operation of all the beneficiaries in eliminating abuse as far as possible

(e) ***The Union* of *Soviet Socialist Republic:* —** The attitude of the Soviet Government towards the health of the people has been described by Professor sigerist in the following words:—

> "Health is one of the goods of life to which man has a right wherever this concept prevails the logical sequence is to make all measures for the protection and restoration of health accessible to all, free of. charge; medicine like education is then no longer a trade, it becomes a public function of the State."

This conception of health as a public function has resulted in the development of a coordinated scheme of preventive and curative health services, which exists in no other country, and in the recognition of the need for providing an environment which will enable the body to remain healthy and to resist disease. "For this reason the control of housing, of industrial conditions, and other aspects of life, comes under the care of the People's Commissariat of Public Health. Another function of that department is to encourage and look after the communal restaurants which, in the Soviet Union, have achieved such popularity that they serve 20 million people a day.

The health service is entirely free to the people and places at the disposal of the patient not only the services of the general practitioner but also of the specialist as well as laboratory facilities.

* “Health for All” by Stark Murray.

The following quotation from "Health for All" by Stark Murray throws light on the structure and functions of the Russian health services:—

"The structure of the Soviet medical system follows the general administrative structure of the country. In. order that planning may be complete for the whole State it is controlled on the one hand by the Peoples-Commissariat of Health, on the other hand by health committees and health nuclei organized in every factory, on every one of the large collective farms, and. in every district. The one form of control is the. Natural outcome of the recognition that health protection is a function of the State, the other is the logical outcome of the principle that the workers themselves must take an active part in the protection of their own health. The system as it now stands is therefore not-one forced on either the people of Russia or the medical profession by a particular group or class, but has had the active support and criticism of those interested in the service either as the purveyors of medical treatment or as the consumers of medical care.

"It will be recollected that Russia takes her present name— the Union of Socialist Soviet Republics—because the administration is divided up so that local government is carried out by a form of local authorities known as Soviets. Under the constitution, each of these Soviets appoints certain committees for certain functions and one of these must always be concerned with the public health. Its duties, as laid down by a decree on. January 1st, 1931, are: —

(a) to supervise all hospitals and sanitary establishments,-

(b) to take all necessary steps in the organization of sanitary inspection and combating venereal disease;

(c) to advance the knowledge of personal hygiene and develop physical culture.

In addition it has other duties in relation to social insurance..

"There are altogether some seventy thousand such Soviets in Russia, apart from the Soviets of the larger cities which function in a slightly different way, not without parallel in the case of an urban district council and a borough council in one of the large cities of this country. The smaller Soviets are linked in districts or Rayon's, and each of these has an Inspector of Public Health, a doctor, who is responsible for the entire health work of the district. A large city such as Moscow, which has its own central Soviets and local Soviets, is also divided into districts comparable to the boroughs of London, and each of these also has its own health department and its own Inspector of Public Health. In the very largest districts further subdivisions may be made, for it is the aim of the system to use units which can reflect the needs of the individual citizen.

The districts or Rayon's are further centralized in larger units which we may call regions, and these are in turn under the central administration of each of the Republics through a Commissariat of Public Health. This Commissariat directs and controls the whole of the health work of the Republic, and is concerned therefore with the prevention, diagnosis and cure of disease. In addition it controls medical education, medical research, and any industries connected with medicine. It should also be noted that while the local health departments are responsible to the general executive committee in administrative and financial matters, their responsibility in regard to medical and sanitary problems lies entirely with the Commissariat of Public Health there is, therefore, no interference with purely medical questions by organisations or authorities not directly connected with the medical profession. As a further safeguard it is laid down that the Commissar of Public Health must be medically qualified."

(f) ***New Zealand.***—In New Zealand there is a Social Security Act which provides, among other things, a free and complete medical service to the whole population. The service was designed to operate like the panel system in Great Britain, the doctors working in their individual capacity and payment being made to them on a capitation basis. Well-to-do individuals are not compelled to accept free treatment, but they are entitled instead to a cash payment, which can be utilized by them towards defraying the cost of the treatment or hospital care when obtained from a private physician or hospital.

It is understood that the medical profession, as represented by the British Medical Association in New Zealand, refused to operate the scheme and that the Government, therefore, had to agree that, when a doctor refused direct payment from the State, patients could continue to pay the doctor as before and recover such payments from the State.

Summary of Modem Trends

5. To sum up, the modern trend is towards the provision by the State of as complete a health service as possible and the inclusion, within its scope, of the largest-possible proportion of the community. "The need for ensuring the distribution of medical benefits to all irrespective of their ability to pay, has also received recognition. "Provision of medical relief for the community has developed, in the past, on a contractual basis between the doctor and his patient. The latter has had the right of choosing his own doctor and in countries, where the family physician, system has been in existence, the knowledge of the doctor in respect of individual members of the family and the regard and esteem of the latter towards 'the doctor have been of advantage to both parties. Further, individualism in medical practice has promoted wide opportunities for those practitioners who are successful in their professional career, and has provided the incentive for ambitious and capable men to make the most of their talents. To them a change-over from independent medical practice to a salaried State service is naturally repugnant. Apart from these, there are certain sections of the medical profession which view with genuine apprehension the results of making over the function of

providing medical protection for the community entirely to the State. They fear that political influence or considerations of seniority or administrative ability may play an undue part in influencing promotion. They also fear that the security of tenure and graded scales of salary that a State service will provide, might discourage initiative and the pursuit of efficiency. There is, in addition, the feeling that the free choice of a doctor by the patient and the intimate relationship, which the family doctor system has helped to develop in_ the past, might also, be disturbed. We do not feel called upon to pursue controversies in regard to this question because; as we shall show later our conditions are such as to leave no option in the matter. We are satisfied that our requirements can only be met satisfactorily by the development and maintenance of a State health service.

The Application of these Trends to India

6. We may now ask ourselves the question how far these modern trends in other countries are applicable to India. While inadequacy of trained personnel and of funds may set limits to the rate of progress in the expansion of the health services in the country as a whole, the enunciation of certain definite principles on which such expansion should be based is of great importance. The following questions seem, at the outset, to require an answer. —

(1) Whether the service should be free or paid for by the recipient: if the latter, whether it should be a graded" scale of payment so as to suit the level of the patient's income; and whether such payment should be made on each occasion when service is rendered or through some form of sickness insurance;

(2) Whether our scheme should be based on a full-time salaried service of doctors or on private practitioners-resident in each local area or settled there on a subsidy basis:

(3) Whether, in either case, some measure of choice can be: given to the patient as regards; his doctor,

(1) Whether the medical service should be free or whether it should be paid for,—The general tendency appears to be towards basing the national health plan on a system of social insurance; One reason for this may be found in the view expressed by the Australian Minister of Health that the people should be spared the-humiliation and bitterness of accepting charity. The same view has-been taken by the Canadian Government which has based its health programme on a compulsory system of social insurance. In Great Britain the proposed National Health Service will be financed "partly by an insurance contribution, under whatever insurance scheme is in operation, and partly by the ordinary process of central and local taxation." In the United States of America, no national scheme for the promotion of health is, at present, in "operation. A system of "co-operative medicine" which guarantees adequate medical service to the employees during times of sickness through the prepayment of small amounts is becoming a growing feature of industrial life. But this system depends largely upon the private employer and is not a State enterprise. Even in Soviet Russia, where medical care is free to all, the cost of the services is partly mat from insurance funds. Contributions towards these funds are, however, no made

by the individual workers but by the factories and other institutions in which they work.

In India it is recognized that there are difficulties in the way of introducing, at present, a scheme of health insurance either by itself or as part of a universal social insurance scheme. We feel that a very large section of the people are living below the normal subsistence level and cannot afford as yet even the small contribution that an insurance scheme will require. We therefore consider that medical benefits will have in any case, to be supplied free to this section of the population until at least its economic condition is materially improved. WE are averse to drawing any line of distinction between sections of the community which are and are not in a position to pay for such benefits. The application of a "means test" for this purpose is unsatisfactory and may often involve inquisitorial enquiries. Such enquiries place an unpleasant duty on the officer making them and may give rise to resentment and a sense of grievance. We consider, therefore, that for the present medical service should be free to all without distinction and that the contribution from those who can afford to pay should be through the -channel of general and local taxation.

it will be for the Governments of the future to decide ultimately whether medical service should remain free to all classes of the people or whether an insurance scheme would be more in accordance with the economic, social and political requirements of the country at the time.

We should like to record the following general recommendations regarding the provision of health service to the community in the near future: —

(i) that public funds should, as far as they are available, be devoted to the development of the health service, which we have recommended, for the community in general and for certain particular sections of it, *e.g.,* women and children and should not be spent on the provision of special facilities for other sections of the population.

(ii) that the money for such special facilities, if they are to be developed, should be provided by the communities or groups which will be benefited by these services and

(iii) that the general health service should minister to the needs of the people without charge to the individual. These recommendations are subject to the explanation which we have given on page 126 in the chapter dealing with industrial health.

(2) ***A salaried service as against a service of private practitioner:***— One of the fundamental requirements in developing an adequate health service for India is the provision of the requisite health personnel to cater to the needs of the large rural population in the country. This is a question which has presented very considerable difficulty in the past. The absence of certain amenities and services in the countryside has proved a deterrent to medical practitioners leaving the attraction of cities and towns and migrating to 'the villages. Various attempts have been made to solve the problem. One method which has been tried in more than one province has been the settling of medical practitioners in rural areas and giving them a subsidy which will enable them to start practice.

This subsidy was intended to be supplemented by private practice among the richer sections of the community. We have had considerable evidence to show that this method has been far from being an unqualified success, partly because in many villages the income derived from private practice is too small to support the doctor in reasonable comfort. The result has been that, in many cases, the better type of such subsidized doctors has tended to gravitate back to the towns. In areas where there are greater opportunities for private practice, the more prosperous sections of the community have, we were told, generally received greater attention than the poor. We have, therefore, come to the conclusion that the most satisfactory method of solving this problem would be to provide a whole-time salaried service which will enable Governments to ensure that doctors will be made available where their services are needed. The evidence tendered before the Committee by a number of representatives of medical associations, by private individuals and by several responsible medical administrators lends strong support to this proposal.

(a) ***Prohibition of private practice by whole-time salaried doctors***— The next question is whether these whole-time salaried doctors should be permitted private practice or not. Our view is that, at the periphery, the same doctor should combine curative and preventive functions and that the training of the future doctor should be modified so as to enable him to carry out these composite duties. In so far as preventive health work is concerned, the practice everywhere is to give the medical officer responsible for it adequate emoluments and to prohibit private practice. As regards medical relief the practice has so far been to permit private practice, but the desirability of doing so in the future requires serious consideration. There was a general agreement, among those whom we interviewed, that prohibition of private practice was essential in order to ensure that the poor man in the rural areas received equal attention with his richer neighbor. Many of the smaller towns do not differ materially from rural areas and the remarks in the preceding paragraphs apply equally to them.

Further, the fact that curative and preventive functions will under our proposals, be combined in the same individual also seems to require the prohibition of private practice. Otherwise it is almost certain that a doctor's preventive duties will not receive the attention which is essential.

(b) ***Part-time medical men.***—In some of the larger district headquarter towns and particularly in the cities, the number of general practitioners with high qualifications and of specialists has been growing during recent years. The possibility of utilizing their part-time services to supplement the health organization in those urban areas may with advantage be considered, particularly in the transition period before the programme of professional training recommended by us provides the country with an adequate number of trained men and women for the different branches of the health service.

Even in our long term proposals outlined in the next chapter we have suggested the inclusion of a certain number of part-time medical officers to be employed in the hospitals at the headquarters of secondary units and of districts. We have suggested that their proportion to the total strength of medical officers at the two types

of hospitals might be about 25 per cent. The reason for the inclusion of part-time workers in these hospitals will be explained in the next chapter.

(C)'***Employment of doctors on an honorary basis.***— The question of the employment of doctors on an honorary basis also requires careful consideration. As regards the long-term programme, our proposals for an expanding health organization will probably lead to the absorption into the public service of the large majority of existing doctors as well as of those who will be trained in the future. Further, if these services prove efficient and satisfactory for meeting the needs of the people, it may be expected that the scope of activity for practitioners who, by choice, remain outside-the State health services, will become limited to a section of the community consisting almost entirely of its wealthier members. Those who cater to the medical needs of this section will probably be few in number. They are, however, likely to be of a high standard of professional skill and academic attainments and it is possible that it may be found advantageous to make use of their services in an honorary capacity. During the first ten years the need for medical men will undoubtedly be great and there seems, therefore, every reason for utilizing the services of those who are prepared to work on an honorary basis. At the same time, the employment of professional men in a paid part-time capacity is normally to be preferred to honorary service. The State would, in this case, acquire greater powers of supervision and control over a worker than if he gave his services free of charge,

(d) ***A salaried State health services no serious impediment to private practitioners.***—We consider that any apprehension that private practitioners will be seriously affected to their detriment by our proposals for a State health service is unfounded. In the first place, the need for doctors to man the services we contemplate will be so great that we believe that all existing private practitioners, who desire to enter these services, will be able to do so if they fulfill the requirements that may be laid down. We feel that age should not of itself, be a bar to such entry provided the applicant is fully qualified otherwise to fulfill the duties to be assigned to him. Those who prefer to remain in private practice will, we believe, not find their opportunities seriously circumscribed. It will be long before the entire population can be served by our proposed health services and our plan also provides for the utilization of private practitioners in a part-time and honorary capacity.

(3) ***Freedom of choice of a doctor:-*** Such freedom will only be restricted by practical considerations. We contemplate that it will be open to any patient to obtain treatment free at any State institution in the country. This will afford a wide choice of doctors though we realize that in practice it may not be possible for an individual patient to go for treatment far from his home. In the later stages of our plan when a larger number of institutions will be opened, the choice available to the residents in a particular locality will naturally be widened.

CHAPTER III

HEALTH SERVICES FOR THE PEOPLE

The Long-Term Programme

A Well Developed Health Service

1. In formulating plans for a national health service it is desirable to keep in view the objectives that are to be achieved. These include the following: —

(1) the services should make adequate provision for the medical care of the individual in the curative and preventive fields and for the active promotion of positive health;

(2) these services should be placed as close to the people as possible, in order to ensure their maximum use by the community which they are meant to serve;

(3) the health organization should provide for the widest possible basis of co-operation between the health personnel and the people;

(4) in order to promote the development of the health programme on sound lines the support of the medical and ancillary professions, such as those of dentists, pharmacists and nurses, is essential; provision should, therefore, be made for enabling the representatives of these professions to influence the health policy of the country;

(5) in view of the complexity of modern medical practice, from the standpoint of diagnosis and treatment, consultant, laboratory and institutional facilities of a varied character, which together constitute "group" practice, should be made available;

(6) special provision will be required for certain sections of the population, *e.g.,* mothers, children, the mentally deficient etc.;

(7) no individual should fail to secure adequate medical care, curative and preventive, because of inability to pay for it and

(8) the creation and maintenance of as healthy an environment as possible in the homes of the people as well as in all places where they congregate for work, amusement or recreation, are essential.

2. It may not be out of place to offer here a few remarks on some of the requirements of a national health service which have been enumerated above. The old adage that prevention is better than cure has acquired added significance as the result of the great achievements of modern preventive medicine which has reduced in many directions unnecessary suffering and mortality and has helped to lengthen life A sequel to this preventive campaign, which was at first directed mainly towards the control of infectious diseases and has later included, within its scope, other causes of mortality such as cancer and diseases of the circulatory system has been the recognition of the need for promoting measures designed not only to prevent disease but also to develop a sense of well-being in the individual and

his capacity to enjoy work and life to the fullest possible extent. Adequate nutrition, physical culture, recreational facilities, particularly those promoting co-operative effort and the team spirit, and health education directed to the inculcation of the principles of hygienic living have, therefore, become recognized as integral parts of a modern health campaign.

3. Preventive and curative health work must be dovetailed into each other if the maximum results are to be obtained and it seems desirable, therefore, that our scheme should provide for combining the two functions in the same doctor in the primary units, rural and urban, where the health organization will be in close touch with the population.

4. The closer the health service can be brought into contact with the people whom it serves the fuller will be the benefit it can confer on the community. The scheme must therefore provide for the creation of a large number of units each including within itself only such proportion of the population as can be catered for adequately by the health staff that will be employed. These units will naturally be able to offer service of only a limited nature. They must, therefore, be supported by a series of appropriate organisations in an ascending scale of technical efficiency in order to secure for the people all the benefits of modern health practice.

5. The need for the fullest co-operation between the health personnel and the people whom they serve requires special emphasis such co-operation is essential in order that the health campaign may produce its full effect on the individual and on the community. The patient possesses, as a living being, an organic unity based on established habits and these determine largely the extent to which he responds to the medical care bestowed on him. The eradication of undesirable habits can follow only through his co-operation. As regards the community many problems of environmental hygiene, the solution of which is fundamental to the prevention of disease can be solved only with the help of the people. It is therefore considered that the ideal to be aimed at in the development of the community's health organization is its evolution as a joint effort in which the leaders of thought in the medical world and among the people fully participate. The physician of tomorrow, who will naturally be concerned with the promotion of the new era of social medicine, has been well described by Professor Henry E. Sigerist in the following words:—

> "Scientist and social worker, ready to co-operate in teamwork, in close touch with the people he disinterestedly serves, a friend and leader he directs all his efforts towards the prevention of disease and becomes a therapist where prevention has broken down, the social physician protecting the people and guiding them to a healthier and happier life."

6. A health organization enriched by the spirit of such a medical profession will naturally work towards the promotion of the closest co operation with the people. It will recognize that an informed public opinion is the only foundation on which the superstructure of national health can safely be built. The people, in their turn, will hasten the pace of progress by demanding increasingly higher standards of service, by requiring the authorities to devote to the development of

the health programme all the money that can be made available and by promoting, through their active co-operation in the health programme, the attainment of a progressively higher standard of individual and community health.

It is also necessary that the structure of the health organization should be such as to enable the people to influence, through their representatives, the health policy of the country at the three levels of Central, Provincial and Local-Body Administration. Machinery will also be required for associating the medical and ancillary professions with the progressive development of the health programme.

Central, Provincial and Local Area Health Organisations

7. Our proposals deal with the structure and functions of the health organisations that are to be associated with the Central and Provincial Governments and with local authorities in the districts as well as with the inter-relationships of these different types of health administrations. The implementation of these proposals presents two major difficulties, namely, inadequacy of trained health personnel and lack of funds. The process of expansion will, therefore, be necessarily slow, particularly in respect of the district organisations, which will require the largest share of the money and staff involved in the development of the scheme. At the same time the directional organisations associated with the Central and Provincial Governments, which will be concerned with the execution of the development programme, will have to be provided at a much earlier stage in order to furnish the machinery necessary to initiate action.

8. In view of what has been stated above we feel that, in setting forth our proposals, it will make for clarity if the major objectives of a fully developed programme to be attained in thirty of forty years and the smaller scheme for implementation within the first ten years are dealt with separately. The organisations at the headquarters of the Central and Provincial Governments form integral parts of the long and short-term schemes. A description of these organisations is therefore necessary to complete the picture in each case. Nevertheless, a full consideration of the proposals for these Central and Provincial headquarter organisations will have to include, within its scope, various matters relating to the formulation and administration of health policy and the mass of details that may be brought into the discussion is more likely to blur the picture than to add to its clearness. It is therefore proposed that, in the succeeding paragraphs of this chapter, the long-term programme should be set out with only such a brief reference to the organisations at the headquarters of the Central and Provincial Governments as may be necessary to ensure that the scheme can be perceived as an integrated whole. In the next chapter (Chapter IV) will be discussed the short-term programme, which will provide a more attenuated form of health organization for limited areas and will, at the same time, constitute an arduous stage of preparation for the development of the fuller type of health organization proposed for the succeeding stages of the scheme. Chapter XVII will be devoted to a detailed discussion of the health organization, as a whole, which will bring under review the principles underlying our proposals and the inter-relationships between the Central, Provincial and Local area health administrations.

9. We consider it fundamental that the development of the future health programme should be entrusted to Ministries of Health at the

Centre and in the Provinces, which will be responsible to the people and sensitive to public opinion. The need for developing the programme in the closest possible co-operation with the people has already been stressed. Both in respect of legislation and of administration it is likely that some of the measures to be undertaken may offend existing social and religious practices, while others may involve control over the day to day life of the citizen. We therefore feel that it is only a Minister, enjoying the confidence of the people, who can carry such enactments through the legislature and ensure their practical application in the country.

10. The Portfolio of Health at the Centre and in the Provinces should be in charge of a separate Minister. At present various other subjects, such as education or local self-government, are part of the functions of the Ministers in charge of Health. The task of developing the health programme is of such magnitude that a separate Minister for this subject alone appears essential.

11. We have given careful consideration to the question of the existing distribution of health functions between the Centre and the Provinces and to the large measure of autonomy that has been granted to the latter under the Government of India Act of 1935. For reasons which will be fully discussed in Chapter XVII, we have come to the conclusion that certain principles should be taken into consideration in formulating plans for future development. These are: —

(1) It is desirable that the wide measure of autonomy that has been granted to the Provinces, should be respected to the largest possible extent. At the same time our proposals for the future will involve considerable changes in existing health administration and professional education and we therefore feel that, in carrying out these recommendations, the closest possible co-operation between the Centre and the Provinces will be essential. In order to minimize the possibility of friction, to promote mutual consultation and secure co-ordination between the Centre and the Provinces in the formulation of health policy and its implementation, there should be established a Central Statutory Board of Health consisting of representatives of the Central and Provincial Governments. We also assume that the Centre will continue to be in a position to assist the Provinces with grants-in-aid and advice in the development of their health programmes. One of the important functions of this Board should be to make recommendations to the Central Government regarding the distribution of grants-in-aid.

In our view the co-operation that may be expected to develop, as the result of these proposals, between the Central and Provincial Governments, should help to establish a firmer foundation for the harmonious development of the health programme over the country as a whole than any resumption of powers by the Centre. It is recognized that there will be certain exceptional circumstances in which the Central Government should have power to

intervene in Provincial administration in the interests of the remaining parts of the country. This question has been dealt with more fully in Chapter XVII. It is, however, to be expected that the machinery for consultation and co-operation, which has been suggested above, will help to reduce these occasions to the minimum.

(2) The Ministry of Health, Central or Provincial, should be the ultimate authority responsible for all the health services operating within its jurisdiction, should lay down minimum standards of health administration for those services which are within the immediate control of other departments *(e.g.,* railways, prisons, education, labour, etc.) and should endeavour to see them enforced.

(3) There should be the closest possible co-operation between the Ministry of Health and other departments in order to promote the pooling of all the available facilities, curative and preventive, in the interests of efficiency and of economy.

(4) It is essential that the Ministries of Health, Central and Provincial, should have the advice and guidance of technical experts in the planning and maintenance of their health services. As has been pointed out in the White Paper recently issued by the Ministry of Health in England embodying proposals for a national health service, "the provision of a health service involves technical issues of the highest importance and in its administration, both centrally and locally, there is room for special devices to secure that the guidance of the expert is available and does not go unheeded." We recognize fully the need for such technical guidance and have therefore incorporated in our proposals (Chapter XVII) a recommendation for the creation of standing councils of experts at the three levels of central provincial and local area administrations. These Councils will consist of representatives of the medical, denial, nursing and other professions from which the health services will be recruited.

(5) At the Centre and in the Provinces there should be a single administrative officer for the curative and preventive departments of health who will be the principal technical adviser to the Minister concerned. The designation of the officer at the Centre may be Director General of Health Services and that of the corresponding person in the Province the Director of Health Services. These officers will be assisted by a suitable number of Deputy and Assistant Directors General or Directors as the case may be, who will be in charge of different functions, for the details of which reference is invited to Appendices A and B attached to this Chapter.

(6) In our view the administrative district forms a convenient; basis for organizing local health administration. Health activities are closely related to other forms of administration

and it is therefore essential that they should function in close association. This is particularly desirable because we consider that no reasonably rapid advance in the public health of a country can be achieved without a simultaneous advance in other fields of activity such as education, agriculture and animal husbandry, industry, irrigation and communications. The district health organization will be under the control of an officer responsible for both curative and preventive health functions in the area. In order to afford local public opinion the fullest opportunity for influencing the health policy the creation of a District Health Board consisting of representatives of the urban and rural health authorities in the district and the District Collector as members is suggested, while a District Health Council consisting of experts will provide the technical advice and guidance that the Board may require in the promotion of its health programme. With this brief description of the proposed controlling organisations at the Centre, in the Provinces and in Districts, we may now turn to the presentation of the detailed plan which we have in mind.

The District Health Organization

12. Two requirements of the district health scheme are that the peripheral units of the organization should be brought as close to the people as possible and that the service rendered should be sufficiently comprehensive to satisfy modern standards of health administration. It is recognized that districts vary from province to province and within individual provinces, to such an extent in respect of population and area as to make any standards we may suggest only a pattern on which Provincial Governments can base their own organisations to suit local conditions. The recommendations set forth in the following paragraphs should be considered in the light of these remarks.

13. The district health scheme will consist of three types of organization in an ascending scale of efficiency from the point of view of staffing and equipment. At the periphery will be the primary unit, the smallest of these three types. A certain number of these primary units will be brought under a secondary unit, which will perform the dual function of providing a more efficient type of health service at its headquarters and of supervising the work of these primary units. The headquarters of the district will be provided with an organization which will include, within its scope, all the facilities that are necessary for modern medical practice as well as the supervisory staff who will be responsible for the health administration of the district in its various specialized types of service.

14. A district in British India is divided, for administrative purposes, into a number of subdivisions and each of the latter is further divided into smaller units which are known as 'thanas' in northeastern India, as 'tehsils' in the remaining provinces of northern India and in the Central Provinces and Berar and as 'taluks' in the provinces of Madras, Bombay and Sind. A taluk or a tehsil is larger than a thana, the average population of which varies in the three provinces of Bengal, Assam and Bihar from about 78,000 to 181.000. The average area of a thana ranges from about 127 to 420 square miles [see appendix (1). In order to ensure that adequate health

service is given to the people, there should be much smaller units of health administration. In fixing the standard for such a unit the population to be included and the area to be covered should both be taken into account. The extent to which communications have been developed in the area concerned will also have a bearing on the question. But we have assumed that, as the result of a simultaneous advance of the development programme in respect of communications, the large differences in this respect that now exist between various parts of the country will have been removed to a considerable extent by the time the long-term programme under discussion is reached. It is recommended that the population covered by each primary unit should be in the neighborhood of ten to twenty thousand. A wide range of population has been suggested because of the varying concentration of population in the different provinces. In Bengal with its high density per square mile, a population of 20,000 covers on an average 25.6 square miles. On the other hand, in Sind the much smaller figure of 10,000 is distributed, on an average, over 106.1 square miles. Even within individual provinces the variations in density are considerable so that it seems likely that different standards will have to be adopted for primary units in different parts of the same province- Provincial Governments alone seem to be competent, in the light of local circumstances, to determine what the size of the unit should be. A population of 10,000 to 20,000 is suggested as probably being suitable over most parts of the country.

15. The area covered by each subdivision should be divided into primary units on the lines suggested above, with a secondary unit at the sub divisional headquarters. As has already been suggested, the organization at the headquarters of the district will supervise, co-ordinate and regulate the health activities throughout the district.

The Three Million Plan

10. The wide variations that exist, between provinces and within provinces, in the area and population of individual districts have necessitated, in the presentation of our scheme, the drawing up of a plan which is based on an arbitrarily chosen unit of population. A figure of three millions has been taken to represent a district and, in the-description that follows and in the report generally, the plan will therefore be referred to as the three-million scheme. In carrying out these proposals the details which have been given regarding the strength of personnel and cost will have to be modified in the provinces so as to suit the size and population of their individual districts. The need for adopting the administrative district as the area for the application of the scheme has already been stressed. This recommendation should not, however, preclude Provincial Governments from choosing a larger administrative unit than a district if such a unit is considered more suitable in certain provinces. We are offering the three-million plan only as a guide to Provincial Governments for working out their own schemes.

17. A three-million district in an area of fairly high density such as Bengal will consist of 150 primary units, each having, on an average, a population of 20,000. About 30 of these primary units can suitably be included in a secondary unit so that the district will have five such units. The strength of staff and hospital accommodation that are recommended for each of the three types of units are shown

below in tabular form. For further details reference may be made to Appendix 2.

THE LONG-TERM PROGRAMME

Personnel

	Controlling medical officers	Other medical officers	Non-medical staff	Hospital
Primary unit	1	5	78	75 beds
Secondary unit headquarters	1	139	358	650 beds
District headquarters	1	238	1,398	2,500 beds

The Primary Unit

18. In our view preventive and curative health work should be dovetailed into each other in order to produce the maximum results. It is with this idea that the organization for the primary unit has been devised. As will be seen from Appendix 2 each unit will have six medical officers, six public health nurses and a 75-bed hospital and all these can be utilized for organizing a combined curative and preventive health service in the area. Each primary unit is only a link in the chain of the community's health services. The provision of, a number of ambulance units in the area controlled by a secondary unit will be necessary in order to facilitate the rapid removal of cases requiring urgent treatment either from places within the area of each primary unit to its own hospital or from primary unit hospitals, to the larger institution at the headquarters of the secondary unit. Telephonic connection between the headquarters and individual primary units is also desirable in order to promote promptness and efficiency in the administration of medical aid. Of the six doctors one will be the controlling officer who, in addition to his duties of supervision over the whole staff in the area, will also be the administrative head of the hospital of the remaining five medical men at least three will have to work continuously in the hospital in order to provide medical, surgical, obstetrical and gynecological service respectively,

19. There should be provision for domiciliary treatment of the sick in order to supplement the facilities provided by the hospital Over and above the hospital nursing staff there will be six public health nurses for rural health work, these being qualified nurses with training in midwifery. Of these four may be put on to preventive work in the homes of the people. Each nurse so engaged should be able to deal with the health of school children; the welfare of motherland children, tuberculosis work and other activities in the houses within her area of jurisdiction. This will necessitate the provision of a type of nurse who has been trained in all these branches of preventive work. The remaining two public health nurses and two medical officers will be available for the organization and carrying out of curative treatment in the homes of the people. Due precaution will of course, have to be taken to ensure that the provision for domiciliary service is not abused. It is desirable that the doctor employed on such service and in the hospital should exchange duties

at intervals. A similar exchange of duties between those public health nurses who are engaged in preventive functions and those engaged in the nursing of patients under the domiciliary treatment scheme seems to be equally desirable.

20. In our view at least two or possibly three of the six medical officers provided in each primary unit should be women. One of them will be employed in the hospital on the gynecological and obstetrical side. Another will be required for domiciliary duties and a third can with advantage be utilized to supplement the work of the other two in the hospital and outside. It must be remembered that deaths among children under ten years are about 48 per cent of the total number of deaths at all ages and that maternal deaths contribute an important share to mortality in the country. In the circumstances the health programme must, for a long time to come, concentrate on the welfare of these sections of the population. Further, if the health programme is to produce maximum results, education of the growing children and of mothers in health matters must become an important function of the health service. For both these reasons we should like to see the proportion of women doctors in each primary unit maintained at about 50 per cent of the total strength.

21. Excluding the hospital staff the remaining members of the primary unit organization will consist of mid wives, sanitary inspectors, health assistants, a fitter misery and some inferior servants. The functions to be performed by mid wives and sanitary inspectors are sufficiently well known and require no special description. On the other hand a few words about the health assistant seem to be desirable.

22. The idea of creating a class of health worker known as 'Health Assistant, has been conceived by us in order to provide a type of personnel for assisting the medical man and for relieving him of many of his minor duties both on the curative as well as on the preventive side. Thus it will be seen from Chapter TV, where our short-term proposals are discussed, that he will assist the Rural Medical Officer of Health in running his dispensary and will also attend to such matters as purification of water supplies, the checking of vital statistics by house to house canvassing, minor anti-malaria works, the spray killing of mosquitoes and other similar duties. During the transition period, the strength of medical and other personnel in a primary unit will be much smaller than under the long-term scheme, and will have to serve a larger population distributed over a wider area. The services of a health assistant can in these circumstances help to extend more widely curative and preventive health care even though it may be limited in scope. It may be asked whether, in the larger scheme under the long-term programme, there will be room for a man of such limited technical skill. It is true that, with the increased facilities for institutional and domiciliary medical care that the larger scheme will provide, there will be less need for the services of the health assistant. But he can and should be made to devote himself more fully to preventive work. His training will no doubt have to undergo suitable alteration. In any case the question of continuing this class of health worker can safely be left to the judgment of the Provincial authorities, when they have acquired sufficient

experience of the nature and quality of the work performed by health -assistants.

The Secondary Unit

23. The staff employed at the headquarters of a secondary unit will be considerably larger than that stationed at the headquarters of a primary unit. The Administrative Officer in charge of the secondary unit will be responsible for the supervision and co-ordination of all curative and preventive health work in the unit. He will also have general supervisory control over the 650-bed hospital. The whole-time heads of the different departments of medicine, surgery, maternity, tuberculosis and pathology at the hospital will perform the dual function of attending to the duties of their respective sections in the hospital and of inspecting and guiding such work in the primary unit hospitals.

24. In addition to these, the secondary unit provides for two senior public health nurses and two senior sanitary inspectors who will be responsible for supervising the work of the corresponding officers in the primary unit. We would like to emphasize the necessity for providing adequate office staff to relieve the administrative medical officer and his assistants of purely clerical duties.

The District Headquarters Organization

25. The provision for medical relief at the district headquarters is, as may be expected, on a much larger scale than that at the secondary unit hospital. The number of beds in the district hospital will be 2,500 and the numbers of medical officers and other personnel employed will also be proportionately larger than in a secondary unit hospital.

26. The secondary unit and district headquarter hospitals, with their better equipment and more highly qualified medical personnel, will be the institutions to which the complicated cases admitted in the primary unit hospitals will be removed. As has already been pointed out, a system of ambulances and telephone connections between all the three types of hospitals will be required to ensure that these institutions are utilised to the fullest possible extent.

27. The health administration of the district will be carried out by the Officer in Charge of the District Health Services and by a number of deputies under him who will be responsible for medical relief, public health, environmental hygiene and maternity and child welfare work respectively. A fifth deputy may possibly be found useful for controlling nursing administration. The heads of the different sections in the district hospital dealing with medicine, surgery and so on will mainly be concerned with professional duties. At the same time it will be of advantage if they can occasionally visit the secondary unit hospitals and a certain number of primary unit hospitals and inspect and guide the professional work of officer discharging corresponding duties in these hospitals. Such contacts should help to improve the standard of professional work carried out in the hospitals of the districts generally. It is not desirable that these specialists, in charge of the different sections in the district headquarters hospital, should be burdened with routine administrative and inspection duties especially if the hospital is associated with a teaching medical institution. Hence we have suggested that a number of deputies should be provided to help the administrative officer in the various fields referred to above.

28. In respect of tuberculosis and leprosy, however the officer-in-charge of the respective wards in the district headquarters hospital will also have to undertake the organization and superintendence of field administration in his sphere of work. The Deputy and Assistant Directors of Health Services at the provincial headquarters, who deal with tuberculosis and leprosy, will be responsible for coordinating these activities in the province as a whole.

The Hospital Social Worker

29. At all the three types of hospitals, primary, secondary and district headquarters, social workers will be employed. Their functions will include, among others, the visiting of the home of the patient in order to ascertain the causes underlying the disability for which he has sought the aid of the hospital and "service as a connecting link between the hospital and the public in the treatment of the individual patient and the general health programme of the area concerned". It will thus be seen that, under our programme, the treatment of disease has been approached not merely from the standpoint of affording the patient immediate relief but also that of attempting to remove the causes which are responsible for his condition.

Part-time Medical Men

80. A certain proportion of the doctors employed in the secondary and district headquarters hospitals may be part-time workers. Their proportion to the total strength of medical men in these two types of hospitals will not exceed 25 per cent. These institutions will do a considerable amount of teaching. Some of the district headquarters hospitals will be attached to medical colleges while the others and most of the secondary hospitals will have to provide refresher courses' for doctors or facilities for the training of those who, after the qualifying examination, are required to take their internship for a year. In addition, these institutions will have to take part in the training of other types of health personnel such as nurses and mid wives and will have to run refresher courses for them.

31. In hospitals attached to teaching medical institutions it is considered desirable that there should be a proportion of medical men who combine hospital teaching work with private practice so as to enable them to gain the wider experience that contact with the general public ensures. This type of experience may be lacking in the case of doctors who belong to a salaried service and have only worked in hospitals. We have been advised that there is distinct room for a type of professor who has experience of teaching work and private practice up to the age of about 45 and who then gives up such practice and becomes a whole time teacher. We agree with this view and therefore recommend the retention of a certain number of part-time workers of sufficient eminence from among whom clinical teachers for full-time duties will become available.

32. The scheme that we have described in the preceding paragraphs is only one stage, although an advanced stage in comparison with existing conditions, in the development of the national health programme. The conception of the scope of the functions of a community health service has been continually widening and we have no doubt that this process will go on. Side by side with such changes the functions that the doctor will be called upon to discharge will also increase in scope and change in quality. As at present, he will

continue to concern himself with remedial and preventive measures in respect of the sick and the convalescent. We anticipate, at the same; time, that his range of duties will extend, to an increasing extent, over the healthy members of the community in order to promote their general sense of well being. Medical supervision of work and play, of the food that people eat, of public provision for rest and recuperation as well as periodical medical examination and the rectification of faulty modes of life will be some of the many new duties that the-physician of the future will be called upon *to* undertake. Our view therefore is that the national health organization will tend to become a whole-time salaried service devoting itself to the development of the health of the people. The medical men in such an organization will be recompensed adequately by the State but the supplementing of such income by private practice will be prohibited. The tendency towards this is even now recognizable in all countries by the prohibition that is operative in respect of the preventive health services. Thus there will ultimately be no room for the part-time worker in the State health organisation. But it is impossible for us to see at what time this stage will be reached in India. In the long-term programme described in this chapter we have not therefore excluded the part-time doctor although we have reduced the proportion of such workers to about a fourth of the total number.

Hospital Accommodation

33. The total number of hospital beds provided under our scheme for a population of three millions will be 17,000 or a ratio of 5.67 beds per thousand of the population. If this figure for hospital accommodation can be provided in India within the next thirty or forty years the achievement must be considered as a remarkable advance on the existing state of affairs. The present total bed strength in British India is estimated to be in the neighborhood of 73,000 or approximately 0.24 bed per 1,000 population. This ratio will have to be increased about twenty three times in order to reach the pro posed figure of 567 beds per 1,000.

34. Even this phenomenal increase in the provision of hospital accommodation will not, however, bring India close to the standards that have been reached elsewhere. In the United States of America the corresponding ratio is 10.48 beds and in England and Wales-*7.*14. It is understood that, in England, with the existing morbidity and mortality rates, the minimum hospital accommodation required is estimated at 10 beds per thousand of the population. 35. It is doubtful whether the ratios for bed strength to population in England and in the United States of America need be accepted, without consideration, as a guide for India. Congested urban conditions of life contribute largely to the desire for hospitalization even where the state of ill-health may not render it essential. There is every indication that India will become more and more- industrialized and urbanized in the years to come, but if proper planning is done, the removal of existing conditions of overcrowding in towns and cities and the prevention of the development of such a state of affairs on a large scale in the future, should not be an impossible task. Further, at the present time, the vast majority of the people are not hospital minded. While it may not be right to postulate that a change in this attitude will not take place, social habits do not alter quickly. In any case an increase in hospital accommodation from the present figure of 0.24 to 5.67 per 1,000 is

itself so stupendous a task that it seems futile to think at present of any future expansions that may be required in the distant future.

36. The distribution of beds that will be made available under our proposals for different types of cases in the primary, secondary and district headquarters hospitals is shown below. The figures are approximate as the calculation is based on a probable population of 375 million which, it is anticipated, will be reached in British India by the time the proposals under consideration are fully implemented and on the assumption that this population is divided into 125 three-million units of the type described in this chapter: —

Total provision of beds of various types for British India

	Primary unit hospitals	Secondary unit hospitals	District headquarters hospitals	Total
1. Medical	468,750	93,750	37,500	600,000
2. Surgical	187,500	125,000	43,750	356,250
3. Obstetrical and Gynaecological	187,500	62,500	37,500	287,500
4. Infectious diseases	375,000	12,500	5,000	392,500
5. Malaria	112,500	6,250	2,500	121,250
6. Tuberculosis	75,000	75,000	67,500	217,500
7. Pediatrics	-	31,250	31,250	62,500
8. Mental diseases	-	-	50,000	50,000
9. Leprosy	-	-	37,500	37,500
				2,125,000

37. Provision for medical, surgical, obstetrical and gynecological cases is made in all the three types of hospitals and the importance of tuberculosis as a community problem is recognized in the provision of similar facilities for this disease also. For malaria and general infectious diseases, beds are provided in primary hospitals. This will ensure a wide distribution of such facilities, as the number of primary hospitals will be 18,750 or more. Ten and twenty beds have been provided for malaria at each secondary and district headquarters hospital respectively, the corresponding figures for infectious diseases being 20 and 40. These beds will also provide facilities for teaching and research.

38. Provision for patients suffering from mental diseases and leprosy has been made only in the hospitals at the district headquarters. As regards venereal diseases, no specific provision of beds has been made. A large percentage of such cases can be dealt with in clinics associated with the outpatient departments of all the three types of hospitals. The relatively small number requiring hospitalization can be admitted into the ward for infectious diseases if the patients are in an infective stage or for suitable treatment into the medical, surgical and gynecological wards.

Field Organization for Certain Diseases

39. Apart from providing facilities for hospital treatment, the control of many diseases requires a field organization which could concentrate on preventing the spread of infection. Examples are malaria, tuberculosis and leprosy. Malaria is undoubtedly the most -important public health problem in the country today and, in our proposals for the short-term programme we have outlined an

organization for control measures against this disease on a large scale. It is to be anticipated that, before the long-term programme is completed, the advance made in environmental sanitation will have reduced largely the factors favorable to the propagation of the disease. Indeed, the widespread use of D.D.T. and other insecticides of an even more potent nature, which may be discovered in the coming years, may change the situation to such an extent that it is difficult to see at present what the nature of the malaria problem will be by the time our long-term programme is completed. Even-so it will be unwise to assume that malaria will have been eradicated by that time. The maintenance of anti-malaria measures is likely to be necessary at least in those parts of the country where hyperendemi city is the prevailing feature today and where climatic and other factors may necessitate the continuance of control activities. The anti-malaria field organization, whatever size it may assume eventually will work in close co-operation with the primary unit staff. The Public Health Engineer at the headquarters of the district and his assistant at the secondary unit headquarters will be intimately concerned with the control of the disease through environmental-measures. As regards tuberculosis and leprosy, it has already been indicated that the officers in charge of these sections at the district headquarters hospital should direct and control the respective field organisations, although it is difficult to envisage what the size of such organisations is likely to be.

40. The health organization briefly described in this chapter is expected to produce a reasonably satisfactory service for rural and urban communities alike. It is based mainly on a system of hospitals of varying size and of differing technical efficiency. These institutions will play the dual role of providing medical relief and of taking an active part in the preventive campaign. Diagnostic and treatment facilities of a relatively high order should be available in the secondary unit hospitals and to an even larger extent in those at the headquarters of districts. The latter, if they are attached to medical colleges, should function at a still higher level of efficiency. The wide distribution of primary unit hospitals should help to ensure the extension of facilities for institutional treatment over the countryside. In addition, the outpatient departments of these institutions would extend treatment to a much wider section of the population. In our short-term programme we have provided a dispensary for each primary unit and these institutions will continue even after each such unit has been provided with its hospital. The usefulness of all these centers of treatment will be considerably enhanced by the simultaneous development of transport facilities. To supplement this large scale institutional provision for medical relief we have also envisaged the inauguration of a domiciliary treatment service.

41. The part that these medical institutions will play in the preventive campaign will also be considerable. Work in connection with maternity and child welfare tuberculosis, leprosy, etc., will radiate into the community from the hospitals, on which will be based' the outdoor organisations in respect of each of these services. The diagnostic facilities that the large hospitals will provide will also contribute their share to the preventive campaign. The social workers attached to these institutions will help to supply the preventive bias to the treatment of individual patients, in the absence of which' the medical care bestowed on them may fail to produce lasting results.

42. The proposals outlined here emphasize the organic unity of institutional and domiciliary health service and the need for integrating curative and preventive measures in order to develop the health of the community to the highest possible level.

The Strength of Staff and the Estimated Cost under the Proposals

43. What are the implications of these proposals in terms of health personnel and of funds? It is impossible to give correct estimates of either. As regards the health staff, exact estimates of the probable strength of the field organisations in respect of many diseases can hardly be made for reasons which have already been, stated. In regard to cost, it is clearly unwise to predict what the scales of pay of the different services will be at the end of the next thirty or forty years. The value of the rupee is likely to change within that period, and any estimates of cost of the fully developed health organization may have, for these reasons, little meaning if employed for comparison with present day figures. The following figures are, however, given for the purpose of providing some general indication of the extent to which the strength of the health staff and the scale of expenditure will have to grow when the health programme outlined above becomes established.

44. As regards health personnel the number of doctors, nurses and mid wives that will be required is shown below. The numbers now available are also given for comparison: —

	Numbers required for the complete Programme	Numbers now available
Doctors	233,650	47,500
Nurses (including public health nurses)	680,000	7,750 (including existing health visitors)
Mid wives	112,500	5,000
Pharmacists	84,375	75

45. Can such a large increase in the numbers of the health personnel be carried out? An example of an unparalleled expansion of health personnel services is furnished by Russia. In 1913, there were altogether 19,785 doctors in that country. By 1941, the number had risen to 141,600, an increase of over seven times within a period of 28 years. In India the increase required is about five times the existing number of doctors to be achieved in a longer period of years. As regards other types of personnel, Russia has shown an equally remarkable increase. For instance, feldspars, a type of medical worker less qualified than the doctor, nurse and mid wives totaled about 50,000 in the pre-Revolution days and their number rose to. 412000 in 1941. We believe that, given the will and the financial resources to carry through the required measures, the large additions to the existing strengths of different types of health personnel that will be necessary can be provided within a period of thirty to forty years in India also.

46. The annual average cost of the personal health services described in this chapter will be about Re. 1 *per capita* on the basis of a population of 375 millions. An expenditure of Re. 1 per head of the population for a well developed personal health service cannot be considered excessive.

47. Before we conclude this chapter we wish to emphasize that we look forward to an improvement in the health service not only in its quantitative but also in its qualitative aspect. We believe it essential that, through suitable training and such administrative action as may be necessary, a social outlook should be developed in every health worker and that a spirit of emulation he cultivated throughout the rank and file of the service. We feel that, while it is all important that the man or woman worker should have the best technical skill that it is possible for him or she to acquire, the possession of other qualities is equally important in order to produce effective results. The woman who, through luck of knowledge of mother craft, feeds, bathes, clothes or nurses her baby improperly, the tuberculosis patient who, through ignorance, disseminates infection, by indiscriminate spitting and coughing, among those with whom he comes in contact, the child who possibly through lack of discipline at home and of that atmosphere of love which is essential for promoting his psychological development on sound lines, has grown into an intractable individual with anti-social habits all require the technical knowledge and skill that the doctor, the nurse and the social worker can make available to them. But other qualities are also needed in these health workers. Understanding and sympathy, tact and patience are equally important for the proper handling of these persons and, in their absence, mere professional skill will fail to achieve satisfactory results. On the other hand the possession of these qualities will lift the efforts of the health worker to the plane of social service. The reward that flows from the latter enriches the giver and the recipient alike.

APPENDIX A

Central Ministry of Health

(Representatives of the Central and Provincial Governments) — Statutory Central Board of Health — Minister. — Central Health Council (Experts)

DIRECTOR GENERAL OF HEALTH SERVICES

General Administration

1. General administration and co-ordination.
2. Civil service personnel section.
3. Purchase and supplies.
4. Finance and accounts.
5. Properties.
6. Transport.
7. Workshops.

Medical Relief

Insurance	*Non-Insurance*
Hospitals, Clinics and Dispensaries.	Hospitals, Clinics and Dispensaries.
Mental diseases.	Mental diseases.
Nursing.	Nursing.
Pharmacy.	Pharmacy.
Medical care for Centrally Administered Areas.	Medical care for Centrally Administered Areas.
Rehabilitation.	Rehabilitation.
	Mercantile medical relief.

Public Health

1. Communicable diseases.
2. Nutrition.
3. School health, venereal diseases, tuberculosis and other personal health services.
4. Maternity and child-welfare.
5. Industrial health.
6. Vital statistics.
7. International quarantine and international health.
8. Internal quarantine.
9. Enforcement of standards for biological products and drugs in interprovincial commerce.
10. Enforcement of standards for food in interprovincial commerce.
11. Administration of Central Government areas.
12. Preventive aspects of mercantile marine.

Professional Education and Research

A.—
1. Medical Education including postgraduate training.
2. Dental education.
3. Pharmaceutical education.
4. Public Health Engineering education.
5. Nursing education.
6. Training of auxiliary workers.
7. Grants-in-aid.

B. Research—
1. Undertaken by Government.
   (a) Medical subjects.
   (b) Public Health Engineering and industrial subjects.
   (c) Social subjects.
   (d) Biological products, including standardisation
   (e) Biostatistical subjects.
2. Undertaken by other organisations.
   (a) Grants-in-aid.
   (b) Scholarships.
   (c) Exchanges.
3. Survey and planning.
4. Library, journals, publications and translations.

C. All-India organisations—
(a) Medical Council of India.
(b) Nursing Council of India.
(c) All-India Dental Council.
(d) All-India Pharmaceutical Council.

Public Health Engineering

1. Water and Sewage control.
2. *Environmental hygiene in respect of industry*—
   (a) Control of special safety and occupational hazards.
   (b) Control of environmental health standards including light ventilation, heat, noise, etc.
   (c) Control of offensive trades and of stream pollution.
   (d) Control of smoke nuisance.
3. *Type Planning*—
   (a) Hospitals, clinics.
   (b) Water and sewage.
   (c) Housing, etc.
4. Supervision of housing.
5. Control of insects, etc.
6. Miscellaneous.
7. Central Water and Sewage Board.

Town and Village Planning

(a) Housing.
(b) Slum clearance.
(c) Zoning.

APPENDIX B

Provincial Ministry of Health

(Representatives of the Provincial Government and of local bodies)

Statutory Provincial Board of Health

Minister

Provincial Health Council (Experts)

DIRECTOR OF HEALTH SERVICES

General Administration

1. General administration and co-ordination.
2. Personnel section.
3. Purchase and supplies.
4. Finance and Accounts.
5. Properties.
6. Transport.
7. Workshops.

Medical Relief

Insurance	*Non-Insurance*
Hospitals, Clinics and dispensaries.	Hospitals, Clinics and dispensaries.
Mental Hospitals and Clinics.	Mental Hospitals and Clinics
Nursing.	Nursing.
Pharmacy.	Pharmacy.
Rehabilitation.	Rehabilitation.

Public Health

1. Communicable diseases.
2. Epidemiology.
3. Vital Statistics.
4. Maternity and child-welfare.
5. School health.
6. Industrial health.
7. Venereal diseases, tuberculosis and other personal health services.
8. Nutrition.
9. Enforcement of standards for biological products and drugs.
10. Enforcement of standards for food.
11. Provincial and Regional Laboratories; production and distribution of biological products.

Professional Education and Research

A.—
1. Medical Education including postgraduate education.
2. Dental education.
3. Pharmaceutical education.
4. Public Health Engineering education.
5. Nursing education.
6. Training of auxiliary workers.
7. Grants-in-aid.

B. Research—
1. Undertaken by Government.
   (a) Medical subjects.
   (b) Public Health Engineering and industrial subjects.
   (c) Social subjects.
   (d) Biological products including standardisation.
   (e) Biostatistical subjects.
2. Undertaken by other organisations.
   (a) Grants-in-aid.
   (b) Scholarships.
   (c) Exchanges.
3. Survey and planning.
4. Library, journals, publications and translations.

C. Provincial Organisations—
1. Provincial Medical Council.
2. Provincial Nursing Council.
3. Provincial Pharmaceutical Council.
4. Provincial Dental Council.

Public Health Engineering

1. Water and sewage control.
2. Industrial engineering:
   (a) Control of special safety and occupational hazards.
   (b) Control of environmental health standards including light ventilation, heat, noise, etc.
   (c) Control of offensive trades and of stream pollution.
   (d) Control of smoke nuisance.
3. Type planning:
   (a) Hospitals, clinics.
   (b) Water and sewage.
   (c) Housing, etc.
4. Supervision of housing.
5. Control of insects, rodents, etc.
6. Miscellaneous.
7. Provincial Water and Sewage Board.

Note.—It is the considered opinion of the Health Survey and Development Committee that housing, slum clearance, zoning, etc. are of sufficient importance to necessitate the creation of a Ministry of Town and Village Planning in each province.

CHAPTER IV

HEALTH SERVICES FOR THE PEOPLE

The Short-Term Programme

Introduction:

1. in the last chapter we have described a long-term scheme of health services for the country as a whole, which will provide health protection for the community on a much larger scale than that which exists at present and will include within its scope domiciliary and institutional services, curative and preventive, on lines which follow modern trends of medical practice. We consider that, given the resources, human and material and the determination to implement this programme, it should be possible for Governments in the country to develop these services within a period of thirty to forty years. Two serious difficulties in the way of a rapid development of our health programme are inadequacy of trained health personnel to man these services and lack of funds. The question of training the required personnel will be dealt with in the section dealing with professional education. As regards funds we hold the view that the health programme demands very high priority in the allocation of available financial resources. Apart from the intrinsic importance of maintaining individual and community health at its highest level, we strongly hold the view that the carrying out of the health measures we propose is one of the most effective ways of ensuring the economic prosperity of the country and of materially raising the level of the national income. It is obviously impossible to assess accurately, in terms of money the effects of ill-health on the community. While certain items such as loss of wages through incapacity to work and the expenses incurred in treatment can be estimated with some degree of preciseness, the pain suffered, the inconvenience and anxiety caused to the patient and his relations or the sense of well-being that would have prevailed in the absence of sickness are obviously insusceptible of conversion into money. Not can any accurate estimate be made of the financial loss that the country suffers as the result of decreased productivity through sickness. Nevertheless, in order to give some idea of the magnitude and importance of this problem we should refer to the estimate made by Lieut.-colonel J. A. Sinton, who places the annual loss to India on account of malaria alone anywhere between 147 and 187 crores of rupees. Enormous though this estimate is it does not pretend to cover all losses attributable to this disease. If to these figures were added the valuation of losses consequent on malnutrition and the many serious diseases other than malaria, which are widely prevalent in the country, we are presented with the most convincing argument we can find in support of our contention that, even if the question is regarded from the purely financial standpoint expenditure of public funds on an effective health development programme is a sound economic proposition. To shut our eyes to the consequences which a halting, ineffective and timid health policy imposes on the country can only result in perpetuating a tragedy which is as poignant on the national as on the individual side.

2. No useful purpose will, however, be served by ignoring or bypassing realities and in framing any practical programme we have

to take account of the limiting factors of lack of funds and of trained personnel, which in the early stages must impose a brake on rapid progress. The first consequence is that the health programme which we eventually visualize for the whole country must initially be introduced in an attenuated form and must be developed by stages. Any scheme which may be introduced must, however, be of such a nature that, if effectively executed, it will be able to ensure the production of demonstrable results during the period covered by it. In framing our short-term programme we desire to do no more than present a detailed picture for the general guidance of the provinces. We realize that local conditions may call for a modification of some of its features. We recognize that varying resources in men and money will be reflected in the pace at which the health programme can be developed in the different provinces. We believe, however, that despite factors making for a limited diversity in its practical application the depiction of a general plan of development will serve an essential purpose. It will help to define a more or less uniform goal for the country which we consider of great importance and will serve to point cut the level of achievement to be normally reached within specific periods of time. Such a schedule will also assist; we have no doubt, in stimulating effort in the provinces and in developing a spirit of friendly emulation among them in promoting the health of their people.

3. We have framed our suggestions for a short-term programme after taking into account the limitations to which we have referred. We shall now describe in some detail the picture of the health organization that we suggest should be developed during the first ten years and indicate in much broader outline certain objectives that may be kept in view during the next five years. The detailed programme will cover two stages of five years each and we shall indicate the implications of our scheme in terms of personnel cost and the population covered by the health services during each of these quinquennia. Apart from providing new facilities for medical care for the people, these two periods will constitute a stage of intensive preparation for the subsequent development of the health programme at a more rapid pace, through the provision, in these earlier years of institutions and other opportunities for the training of personnel and through the actual production of a large number of health workers of different categories.

4. Another important aspect of the health programme for the first ten years is that it will be intimately concerned with the development of administrative technique suitable to this country. Health administration is the application of medical knowledge to the life of the community, and the methods to be employed in its application are largely influenced by the attendant social economic and environmental factors. These methods have therefore to be worked out in relation to local conditions. The skilled services that can be provided for this purpose in countries such as the United Kingdom and the United States of America, with their relatively large national incomes, are obviously unattainable in India today and the health programme that we are envisaging must take account of this basic fact. In the beginning the country will be faced with the necessity of having to some extent and in some fields to put up with senders manned by

imperfectly trained personnel with the ability to perform only limited functions. This subject will be discussed in greater detail later in this chapter.

5. We have already referred to the considerations which make detailed planning inadvisable too far in advance, and we feel that we should therefore limit ourselves to the task of drawing, with some degree of precision, the picture of our short-term programme for the first ten years only. After the earlier stages of expansion indicated in the present chapter have been reached we feel that we must leave it to the Governments. Central and Provincial, to formulate the lines of further development with a view to the attainment of the larger objectives indicated in the preceding chapter.

6. We wish to make it clear that the proposals that will be discussed in the succeeding paragraphs embody recommendations which are intended to supplement and not supplant the existing health facilities in the areas where our scheme will be introduced. We consider moreover, that our recommendations constitute an irreducible minimum and, were it not for the limitation imposed by the inadequacy of staff and funds, we should unhesitatingly have proposed a more comprehensive scheme than the one indicated below.

7. In the previous chapter we have described the organization, required to provide a reasonably complete health service for the community. For reasons which we have already stated, however, it, will be necessary to cast our short-term programme on more modest lines. Thus, during the first ten years, the district headquarters organization provided in our long distance plan will not be brought into existence. Further, the services provided in the primary and secondary health units during this period will not be so complete and! Comprehensive, owing to the limitations to which we have already referred, as we hope they will be in the later stages of our scheme. But the general character of the work to be done in the primary and secondary health units during the short-term programme and the relation of these units to each other will be the same in the short as in the long-term programme. The general description of the organization set out in the preceding chapter, read with this caveat, is applicable to the. Organization which will operate in the ten-year period.

The First Ten-Year Programme

8. The following brief summary of the major heads of the ten- year programme we are suggesting may enable the detailed proposal which follow to be more clearly understood.

Our recommendations cover: —

I. A province-wide health organization providing for both preventive and curative health work. This will include in each district: —

(i) three types of organisations for general health services *viz.,*
(a) primary health units
(b) secondary health units
(c) the district health unit,

(ii) certain special health services dealing with

(a) malaria
(b) tuberculosis
(c) venereal diseases
(d) leprosy
(e) mental diseases
(f) maternity and child-welfare
(g) School health and (h) nutrition.

11. Field training centers for teaching institutions.

Our proposals for the ten year programme cover also recommendations in regard to a variety of other matters such as Impersonal Health Services, including town and village planning, housing, water supply and drainage, professional education and medical research. They will be found in the separate chapters dealing with these individual (Subjects.

We shall now examine these proposals in greater detail separately.

The Province-wide Health Organization

9. At the outset we were faced with the difficult problem of deciding whether our proposals should at the start be applied in **a** narrowly restricted locality to the fullest extent that circumstances permitted or whether the area of their application should be extended much more widely at the expense of the degree of their application. We have come to the conclusion that the new health services, in howsoever attenuated a form they may be started, should be initiated on as wide a territorial basis as possible. We feel that, for the purpose of demonstrating the resulting improvement in the public health of a province as a whole, the application of our proposals in every district, though it may be over a limited area in each to begin with, will be more effective than concentration of effort in one or two small areas in the province. Further we feel that all parts of a province should, from the commencement, have an opportunity of sharing even though it be to a limited extent, the benefits which we hope that our proposals will bring to the people. We also realize that Provincial Ministers of Health will have to carry popular support with them in the development of the scheme and that public opinion is much more likely to support a broad-based proposal than one which would confine the new health organization to one or two districts in **a** province. The objectives to be reached at the end of the first ten years are indicated below: —

Expansion of the scheme in a typical district

	First year	Fifth year	Tenth year
Number of primary Units	5	10	25
Number of 30-bed hospitals	1	2	13
Number of secondary Units	1	1	2
Number of 200-bed hospitals	1	1	1
Number of 500-bed hospitals	—	—	1

The Primary Unit

10. We recommend that a start should be made with five primary units in each district. Each of these should include within its scope

a population of 40,000 in place of the much smaller and more fully staffed and equipped unit serving a population of 10,000 to 20,000 recommended for the long-term programme. In place of a 75-bed hospital for each primary unit under the fully developed long distance scheme, we suggest that, during the first five years of the short-term programme, one 30-bed hospital should be established to serve four primary units. In the second period of five years the number of such hospitals should be doubled so that each will serve two primary units. In addition each primary unit will have a dispensary with provision for two emergency and two maternity beds.

11. The smaller type of health organization that is proposed in each short-term primary unit and the larger number of people to be served by it will obviously limit the range of activity. The service developed, however, will, it is hoped be on correct lines and will incorporate curative and preventive work on a coordinated basis. The details of the proposed organization for the short-term primary unit are given below:—

Medical officers	2
Public Health Nurses	4
Nurse	1
Mid wives	4
Trained *dais*	4
Public Health inspectors	4
Health assistants	2
Pharmacist.	2
Clerks	1
Fitter Mistry	2
Inferior servants	1
	15

12. This staff, with the exception of certain members of the maternity and child-welfare organization, should be stationed at the headquarters of the primary unit, although their duties will extend over the whole area covered by the unit. The maternity and child-welfare staff, namely, the public health nurses, the mid wives and trained *dais,* should, on the other hand, be located at different places in order to make their services available where required with the least possible delay. The other members of the primary unit staff should also have their areas of jurisdiction demarcated, although they themselves would be located at the headquarters.

The Primary Health Centre

13. A. focal point should be provided in each primary unit from which the different types of activity will radiate into the area covered by it. The area of the unit might, for purposes of health administration be divided into four circles one being associated with the head-quarters of the unit. Here it is essential that the dispensary, the headquarters maternity and child-welfare organization and that dealing with environmental hygiene should work together in intimate association and for this purpose the necessary buildings should be provided in the closest possible proximity to each other. This will also help to coordinate the work of the different members of the staff. This organization at the headquarters of the unit may appropriately be designated the health centre. Its functions will be to provide as effective a health service as practicable under the conditions prevailing

*A *dai* is a woman who practices midwifery as a hereditary profession normally without any training.

at the time, both at the headquarters and in the remaining circles into which we have suggested that the primary unit area should be divided

The Duties of the Primary Unit Stall

14. The staff recommended above is we believe, the minimum required for the efficient working of the centre. Of the doctors one should, if possible, be a woman and both should attend to curative and preventive duties. We suggest the following tentative programme of work for these doctors, which, however, will be subject to revision in accordance with local needs for four hours in the mornings on three days in the week each of them will attend the dispensary attached to the primary unit and, in the afternoons of those days and during the forenoons and afternoons of the remaining three working days of the week, each will attend to preventive work. On the days on which the man doctor attends the dispensary the woman doctor will be on outdoor duty and *vice versa.* Each should have one day of rest in the week although both will have to be available for any urgent calls that may arise.

15. At the hospital the man doctor will normally attend to male-patients and the woman doctor to patients of her own sex and to children. Each primary unit should have two health assistants on its staff. The kind of work they should be required to perform has been referred to briefly in the last chapter. The Health Assistant should perform both curative and preventive duties of an elementary nature under the direction of a qualified medical officer. He should in no circumstances be considered a doctor or allowed to function as such. On the curative side he can help the doctor in the dispensary in sterilizing instruments dressing wounds, keeping records and such other duties as can safely be entrusted to him. His outdoor duties should include the sterilization of water-supplies, vaccination against. small-pox, checking of vital statistics, supervision of minor anti-malaria field operations including the spray-killing of mosquitoes and the tracing of cases of the common infectious diseases. If suitable women can be obtained for training as Health Assistants, it will be desirable to have a man and a woman worker of this type in each-primary unit. As the woman doctor will deal with women and children both at the dispensary and in the homes of the people the help of a woman assistant will be of great value.

16. At each dispensary there will in addition be a trained pharmacist, when this class of worker becomes available in sufficient numbers. In the meantime a compounder will be employed.

17. We consider that a combination of curative and preventive health work is in the best interests of the community and of the professional efficiency of the medical staff employed. In fact the two functions cannot be separated without detriment to the health of the community. For instance our primary unit doctor treating a typhoid patient in his home should, in addition to the medical attention he gives him, ensure that such precautions are taken as are necessary to prevent the spread of infection to the other members of the household. Nor should his responsibility end there. In the interests of the community it is necessary that the sources of infection should, if possible, be discovered in order to prevent the further spread of the disease. It is therefore essential that he should deal with the problem

of disease both in its remedial and preventive aspects. The same: remarks apply to the public health nurse and other members of the organization who are responsible for personal health services in their respective spheres.

l8. We consider it essential that the doctors should be spared all unnecessary clerical work, especially because during the short-term programme they will be fully occupied with the duties we are assigning to them. We have, therefore, provided in our budget estimates two clerks, of whom one will assist the man or woman doctor in making and maintaining records in regard to the patients treated in the dispensaries and the other will do all the clerical work in connection with the administration of the primary unit It will be desirable to give-these clerks special training for a short period in order to enable them, to familiarize themselves with medical and other technical terms commonly used in health administration.

19. We place maternity and child-welfare work in the forefront of our programme. As has been pointed out elsewhere, nearly half the number of total deaths in the community occurs annually among children under 10 years, while deaths due to maternal, causes are estimated at about 200,000 per year. At the same time a much larger number of women are compelled to suffer varying degrees of sickness and disability as the result of pregnancy and child-bearing. The supreme importance of dealing without delay with this section of the population is, therefore, obvious. Further, in our view, a pro aggressive improvement of the public health depends largely on promoting the hygienic mode of life among the people through education directed to this end. It is among women and children that this education should be carried out intensively in order to produce lasting results. The woman doctor the public health nurse and the midwife can carry the message of health to the homes of the people through the numerous contacts which they will establish with women and children-while carrying out their routine duties. We are therefore convinced that the part that the maternity and child-welfare organization can- play in reducing existing morbidity and mortality and in creating conditions, which are essential for promoting healthful living, is of
vital importance.

20. Of the remaining staff, the sanitary inspector and the interior servants will be concerned with improving environmental conditions. The titter mistry's duty will be to help in keeping in good repair tube, wells and other sanitary equipment which will be provided under the health programme. The work of the sanitary staff will be under the close supervision of the medical officer charged with administrative duties of the unit. In addition, as will be seen later from the description we give of the organization at the secondary unit, there will be an Assistant Public Health Engineer at the headquarters of the latter and this officer will be responsible for the requisite technical guidance and for general supervision of all work in respect of environmental. Hygiene in the primary units included within the jurisdiction of the secondary unit. We realize that the staff proposed for this important branch of health administration is altogether too meager to meet the requirements of a primary unit as we conceive its functions to be. But we look to the people themselves to make an effective contribution to the public health by helping in the execution of measures for its improvement. In this task the trained staff we are providing

small though it is, will be of the greatest value in showing the people how their efforts can be made to produce the best results.

21. We have already referred to the need for employing, during the short term, insufficiently trained personnel of certain types if the health services are to be extended to as large a section of the population as possible. For instance, in order to promote school health work, the services of selected school masters, with limited training in the carrying out of certain simple functions, not requiring any high degree of technical knowledge, will have to be utilized in the place of doctors and nurses until the latter become available in 'sufficient numbers to provide a more efficient service. The duties for which teachers should be trained may include the daily examination of school children in order to improve the standard of their personal cleanliness, vaccination against small-pox, the administration of certain drugs, *e.g.,* quinine, supervision of the sanitation of the school and its environment and the health education of the children within limited fields. For performing such duties they should, of course, receive adequate extra remuneration. One of us (Dr. J.B. (Grant) has had considerable experience, during the past year and a half, of developing a rural health organization in the Singur area of Hooghly District in Bengal in order to provide a training centre for the health personnel of that province as well as for the students of the All-India Institute of Hygiene and Public Health, Calcutta. The experience gained at this centre makes it clear that a limited training of seven or eight weeks will not of itself enable school masters to discharge satisfactorily the duties suggested by us without close supervision. It has, for instance, been found necessary for the medical officer in charge, to make a teacher carry out vaccination and other duties in his presence for some time after his training, in order to ensure that a desirable level of efficiency is attained. The two doctors in charge of the primary unit will therefore have to exercise considerable supervision over the work of teachers and other people selected from the villages to help in the promotion of the health programme. Hence it is that we have allotted the major part of their weekly programme to outdoor duties and have suggested the attendance of each at the dispensary only during the forenoons on three days in the week.

22. Most of the medical men, who will be available to Provincial Governments for developing the early stages of our health programme, will not have had the training necessary for preventive health work. It is therefore recommended that a short course of three months' training in public health and preventive medicine should he provided for them. They should, however, be required to obtain a recognized public health qualification within the first five years of entering public service.

The Emphasis on Preventive Health Work in our Programme

23. We realize that the need for medical relief is so great and so urgent in this country that our proposal to make these medical officers concentrate so largely on preventive work may meet with criticism. We have, however, made this recommendation after careful consideration. Our view is that with the limited staff and funds at the disposal of the country, our health programme will show more effective and lasting results if effort is directed towards the creation of conditions conducive to healthful living instead of concentrating too largely

on the administration of medical relief. The extent of sickness prevalent in India today is so large that any conceivable expansion of treatment facilities, which the country can afford under existing conditions, will suffice to provide for the relief of only a small fraction of those requiring such care. Sickness surveys carried out in the United States of America have shown that illnesses causing inability to work for seven or more consecutive days number every year about 125 to 200 in a population of 1.000. A similar investigation in Canada revealed that the corresponding figure was 171 illnesses for 1,000 persons. These illnesses clearly require medical attention. The death rates in Canada and the United States of America are less than half of that in India, and it seems, therefore, reasonable to assume that the corresponding sickness rate for this country may be between 300 and 350 illnesses per year among 1,000 persons. A primary unit may therefore have to deal with about 12,000 to 14,000 such cases annually. These will include many cases of serious illness and of chronic disease, so that the period during which medical attention will be required by individual patients may be considerable. Further, as persons suffering from sickness of shorter duration than one week have been left out and as a certain proportion of them will also require attention, the number of cases needing medical relief may well be at least 20,000 to 25,000 per year in each primary unit. The fact that we are not making here any excessive estimate is shown by the case rate of 1.000 per year for a population of 1.000 which the above mentioned enquiry in the United States of America revealed, when an types of illnesses were taken into consideration.

24. We have quoted these figures only to show that, if all the available money and staff were to be utilized only for the provision of medical relief, we should be meeting the needs of only a section of the population requiring such care under present conditions and those which can be foreseen in the near future. Apart from this, no advance will have been made in the neutralization of the adverse effects of those social and environmental factors which are so largely responsible for morbidity and mortality and without the control of which no permanent improvement in the public health can be achieved.

25. We are fully aware of the need for extending medical relief to all those who are suffering from disease. Nevertheless, when the problem of building the nation's health is viewed in its true perspective, we are compelled to come to the conclusion that the health programme should be developed on a foundation of preventive health work and that such activities should proceed side by side with those concerned with the treatment of patients. We have however, made such provision as is possible under existing conditions, for medical relief also. We anticipate that the successive stages of the health programme will see a steady expansion of treatment facilities as an essential complementary service to preventive health work. We should, however, emphasize that a reduction in the demand for curative treatment can only be secured through successful preventive work.

The Establishment of Village Committees

26. We have already referred to the need for securing the active co-operation of the people in the development of the health programme. Social customs, habits and prejudices, which stand in the

way of progress, must be modified. In the words of Sir George Newman, No far reaching medical reform is separable from social reform, which in its turn finds its source in the highest aspirations of the people."* Today the vast majority of the people of India view with apathy the large amount of unnecessary suffering and morbidity that exists in their midst and, unless this attitude can be replaced by one of active cooperation among themselves an. with the health authorities for the promotion of the health of the community, no permanent success can be achieved. The most effective way of helping to create such a change in outlook is, we believe by providing for the people opportunities of active participation in the local health programme. As far as we are aware, nowhere has this idea been developed to the same extent as in Soviet Russia. The following quotation from Professor Henry E. Sigerist's "Socialized Medicine in the Soviet Union" illustrates the way in which the health programme in Russia provides for the participation of the people on a wide front: —

> "The health programme is not dictated from above, but is on the contrary administered in the most democratic way. Since the principle has been established that the health of the workers is their responsibility, it is logical for them to take a large and active part in the administration of health. Health administration, like every branch of Soviet administration, has the form of a pyramid with an exceedingly broad base. This broad base is new to the world. In capitalist countries health administration does not go beyond the municipal or the country health department. It is the concern of specialists. The people are the object of administration and have no share in it. In the Soviet Union the base of the health pyramid is formed by innumerable health committees or health nuclei organized in every factory every farm, wherever people work."

27. India resembles Russia in its size and population and we feel-that a large number of local health committees or health nuclei will, in this country also, help to secure results comparable with those which we understand have been achieved in that country. We suggest that, in every village, there should be established a health committee of voluntary workers consisting of about five to seven individuals-depending on the size and population of the village. The principle of the panchayat or a council of five elders who, through their collective wisdom, direct community life in the village has long been applied in practice in India. We desire to see local health committees set up on this principle of bringing together a certain number of persons of standing in the village who can be helpful in promoting specific lines of health activity. In selecting such persons we do not wish to bring in the vote and the spirit of competition for the vote which however desirable it may be for conferring on these individuals the right of claiming to be representative of the people, has also the disadvantage of introducing into the peaceful atmosphere of cooperative effort, which we are proposing to create, the heat and controversy of the political arena. At the same time there should be a large

*”An outline of the Practice of Preventive Medicine "By Sir George Newman a memorandum addressed to the Minister of Health, England & Wales.

measure of popular support for these individuals. We suggest therefore that the two medical officers and their subordinate staff should carry out, before attempting to create these village committees, a considerable amount of educative work among the people in regard to the proposed health programme and the desirability of the more public spirited in the community accepting as a privilege the right to associate themselves with the activities of the health organization in the interest of promoting the welfare of all. After such preliminary work, during which they will probably be able to pick out the men and women who are likely to become suitable members of the proposed committee, a meeting of the village people should be called and the purpose in view in forming the committee and the work that will be expected of its members should be explained. Then, as a result of the discussions that follow, it may be expected that suitable persons will be selected with the general approval of the villagers. In putting forward these proposals we are not merely the arising 01 drawing on our imagination. We understand that this method has been tried in Singur with a considerable measure of success.

28. Where village panchayats constituted by law exist, it may be found possible to utilize their services for the purpose we have in view.

29. The members of the village committee will, of course, require training in the elementary functions they will be called upon to perform. These functions should not be of too complicated or technical a character, nor should they take up too much of their time. The special value or these persons lies in the fact that their standing in the village, their local knowledge and intimate contact with the people will enable them to influence the villagers to accept and help to carry out effectively the health measures designed to promote the general welfare. Opposition due to social or religious prejudices is likely to yield more easily to the advice given and the example set by the members of the village committee than to official action.

30. These committee members should also be able to induce the village community to carry out. Without payment and through their own effort, many measures which might otherwise prove expensive. We have in mind such minor sanitary works as the filling of pools, the draining of pits and the removal of rank vegetation in order to improve the sanitation of the village site. Such works are of particular importance in the areas which are subject to outbreaks of malaria.

31. There are many other directions in which the mobilized goodwill of the community can assist the health programme. The general lack of cleanliness in villages is due to the absence of any organized effort to dispose of refuse and night soil in a manner which will render them innocuous to the health of the people. The general belief seems to be that what is undesirable in one's own premises can, without any compunction, be thrown into a public drain or any common open space. This lack of regard for community hygiene can be remedied only by an awakening of a health consciousness among the people. Experience shows that, in the absence of such awakening, improvement in the sanitation of the environment is difficult and often impossible even with the provision of appropriate public services.

32. Each member of the village committee should be assigned definite task. One individual may, for instance, be made responsible for improving the registration and local compilation of vital statistic His association with these duties will, we have no doubt, help to ensure greater completeness in the recording of births, deaths and cases c infectious disease. This member of the committee, if he takes this work seriously, can help to promote a greater sense of responsibility among his fellow villagers for reporting such events to the proper authority. Another member of the committee could interest himself in village sanitation while a third might render active assistance to the health staff in the carrying out of measures against communicable diseases or in the organization of special steps against threatened outbreaks of such diseases during fairs and festivals, after floods or under other abnormal conditions.

33. We need not go into the details of the many ways in which an enthusiastic local committee can help to improve the health of the village. In our view, the development of such local effort and the promotion of a spirit of self-help in the community are as important to the success of the health programme as the specific services which the trained health staff will be able to place at the disposal of the people.

Average Area of and Average Number of Village in, a Primary Unit

34. Before we close this description of the health organization in a primary unit we may draw attention to two factors which have a bearing on the efficiency of the health service that will be made available to the people. These are the average areas over which the proposed population of 40,000 in a primary unit will be spread in the initial years, and the number of villages likely *to be* included under its jurisdiction. The relevant figures are given below: —

Average number of villages and average area for a population of 40.000
(Figures based on the 1941 census)

Provinces	Villages		Area in square miles (including towns & villages)
Madras	38		103.2
Bombay	59		146.6
Bengal	67		51.2
U. P.	85		77.2
Punjab	61		128.8
Bihar	83		76.4
C. P. and Berar	106		234.1
Orissa	127	Taluq	235.0
		Thana	96.2
N.W. F. P.	51		178.0
Assam	136		215.8
Sind	75		424.6

35. In the more sparsely populated provinces such as the Central Provinces and Berar, Assam, Sind and Orissa the area to be covered by the health staff is considerably greater than that in the more densely populated provinces of Bengal, Bihar and the United Provinces. The average number of villages that will be covered by each primary unit will also vary considerably. The need for ensuring adequate service by the staff must be prominently kept in view. In addition the supervising officers should be able to exercise effective control over the work of their subordinates. This is a matter of the

utmost importance. In our view the two medical officers of a primary unit should be able to visit each village at least twice or, better still, three times a month. In the circumstances it seems likely that the figure of 40,000, which we have suggested, may have to be modified in individual provinces in order to suit local conditions. This figure has been suggested only as a guide to Provincial Governments. We have been compelled to adopt it in the initial stages of our programme because, with the numbers of trained staff under certain categories which are likely to become available, particularly during the first ten years of the programme it is impossible to provide for more concentrated work by reducing the area and size of the population covered by a primary unit. In fact, as has been shown elsewhere, the training-programme will have to be started well in advance of the inauguration of the proposed health scheme. Even if this is done, only a portion of the required staff is likely to become available.

Secondary Unit

36. A. secondary unit should be established in each district from the commencement of our programme. It will supervise the work of the primary units included in its sphere of control, which will number five to begin with and will increase to 12 or 13 by the end of the ten-year period. The work of a secondary unit will be concentrated in a secondary health centre located at its headquarters and will include (a) the supervision of the health work done in the primary units within its charge, (b) the control of the 30-bed hospitals in those units and (c) the provision of a higher type of medical service than that provided in the primary units.

37. For providing medical relief of a higher type than that available in the 30-bed hospitals and in primary unit dispensaries there will be a 200-bed hospital at the headquarters of the secondary unit In addition to the staff attached to the hospital, there will be a medical officer responsible for the administration of the whole area under the jurisdiction of the secondary unit as well as officers for organizing and supervising certain specific branches of health activity. The composition of the senior members of the staff is shown below.

For details reference may be made to appendix 8:—

Administrative staff—		
Administrative Medical Officer	1	
Dy. Administrative Medical Officer	1	
Assistant Administrative Medical Officer (Maternity and child welfare)	1	
Assistant Public Health Engineer	1	
Senior Sanitary Inspectors	2	
Senior Health Visitors	2	
Hospital staff—		
Medical Officer in charge of medical wards	1	(Of these one will perform the functions of (the Superintendent of the hospital)
Medical Officer in charge of surgical wards	1	
Medical Officer in charge of obstetrical and gynaecological wards	1	
Medical Officer in charge of the laboratory	1	
Assistant Medical Officers attached to the laboratory	2	
Senior Medical Officer in charge of the X-ray department	1	
Assistant Medical Officer attached to the X-ray department	1	

House staff	6 (two for each of the Medical officers in charge of medical, surgical and obstetrical wards).
Part-time doctors	3 (one for each of the medical, surgical and obstetrical wards).
Orthodental surgeon	1
Dentists	2
Dental hygienists	4

We would once again lay emphasis on our conception of the medical officer of the future as one who combines in himself both curative and preventive functions. In the selection of officers to fill administrative posts we would stress the importance of bearing in mind the considerations we have set out in Chapter XVII Para. 26.

38. In providing administrative machinery for the secondary unit and its associated primary units, we have to remember that, during the short-term programme, the scheme will extend only over certain parts of individual districts and that the administration of the area covered by the proposed new health services will have to be integrated with the health organization of the district as a whole. This problem of integration is primarily one for the Provincial Governments to solve. We are, however, putting forward the following suggestion for consideration: —

We envisage the bringing together of the Medical and Public Health Departments under one administrative head at the headquarters of each province. In order to ensure the orderly development of the new health services, this recommendation will have to be implemented, we believe, from the very beginning. As a corollary to the amalgamation of the two services at the top we consider that district health administration should also be unified under one controlling head whose designation may appropriately be the Officer in Charge of the District Health Services. His functions will be two fold during the period of development of the health programme. He will have to be responsible for the continuance of the existing health services in the areas untouched by our scheme and he will also have to devote a considerable part of his time and attention to the development of the new services. We need not deal here with the health services in the area unaffected by our scheme. As regards the developmental area we propose that the Administrative Medical Officer at the headquarters of the secondary unit, who will be concerned with the coordination of curative and preventive health work under the scheme, should function as a Deputy to the Officer in Charge of the District Health Services.

39. The other administrative officers attached to the secondary unit will be responsible for the functions indicated by their respective -designations. Their jurisdiction will extend over the whole area controlled by the secondary unit and they will work under the supervision of the Administrative Medical Officer.

40. It will be seen that no provision has been made for the supervision of medical relief activities. The Administrative Medical Officer will himself participate in such supervision. In addition, we recommend that the medical officers in charge of the medical, surgical and obstetrical wards should make periodical inspections of the hospitals and dispensaries in the area covered by the scheme and that they should, by advice and guidance, endeavor to raise the level of efficiency of the services provided for the people in their respective fields.

41. One of the four medical officers in the hospitals will function as the Superintendent. We suggest *(vide* appendix 3) that the Superintendent should have the same salary and status as the Deputy Administrative Medical Officer in charge of Public Health. The Medical Officer in charge of the obstetrical and gynecological wards should be a woman.

42. The Assistant Administrative Medical Officer in charge of maternity and child welfare work and the woman doctor in charge of the obstetrical and gynecological wards in the hospital should have the same status and pay. We suggest that there should be a periodical exchange of duties between these two. Such exchange is in the interests of both. The person, who directs domiciliary health work among mothers and children, should have periodical opportunities of doing clinical work in the hospital, while the doctor in the hospital will widen her social outlook and her range of experience by coming into contact with the homes of the people and with the environmental and other factors that are associated with the conditions of ill-health which take the patients to hospital.

43. We attach great importance to the provision of a laboratory service in association with the 200-bed hospital. The medical officer in charge of the laboratory and his two assistants should be able to provide a service covering the fields of pathology, bacteriology and bio-chemistry. Apart from meeting the needs of the hospital, specimens sent from other medical institutions, in the area controlled by the secondary unit, should also be dealt with here. We further suggest that this laboratory should provide a diagnostic service, particularly in relation to infectious diseases, for the general medical practitioners in the area. The service should be given free in the interests of promoting the public health and of encouraging the medical men in the area to adopt scientific methods of diagnosis. It is difficult to estimate the amount of work that this laboratory may be called upon to undertake but we suggest that a beginning should be made with the staff included in appendix 3. It may, however, be necessary to limit in the earlier years the provision of diagnostic facilities to cases of communicable diseases.

44. In order to make the service provided at the hospital as complete as possible we have also included X-ray and dental departments.

45. A secondary unit is normally expected to cover an area with a population of about 600.000. Our proposal to establish a secondary unit in each district simultaneously with the inauguration of the plan seems to require a word of explanation as the population covered by the scheme in each district will reach only 400.000 by the end of the first five years. Two possible objections that may be advanced are that the administration may be made too heavy at the top and that there will be insufficient work for the staff at the headquarters of the

secondary unit. We may deal with the latter objection first. The scheme, which we are recommending, makes a departure from existing health administration in many directions and we feel that an experiment of this nature will require considerable supervision of the peripheral staff. Further, it has already been shown that different formal of service through imperfectly trained staff, such as schoolmasters and villagers, will have to be organized during the short-term programme their training will have to be planned and supervised by the staff at the headquarters of the secondary unit. There will also be a considerable amount of work for the latter in organizing the main lines of activity in the primary units. In our opinion the secondary unit organization will find itself fully occupied with its manifold duties from the very beginning, if the scheme is to be developed on proper lines. If this view of ours is accepted as a reasonably correct estimate of the situation, the first objection will also lose its validity. Moreover the laboratory services, which will be provided at the hospital of the secondary unit for the whole area under its charge, constitute an additional reason for the establishment of the secondary unit simultaneously with the inauguration of the scheme. We hope, however, that 30-bed hospitals serving the primary units will, as soon as-possible, be provided with microscopes to facilitate early diagnosis of certain diseases such as malaria.

46. Another secondary unit should be established when the population covered by the scheme exceeds 600,000. In establishing these organisations care must be taken to ensure that, as far as possible existing administrative demarcations, *e.g.,* the sub-divisions of a district, are adhered to because the functions of the health services will have to be integrated with those of other departments of Government.

Rate of Expansion of the Scheme during the First Ten-years

47. The following tabular statement indicates how we propose that the programme should be implemented during the first ten years:—

Year	No. of primary units (40,000 popula-tion)in a district	populati on served	No. of dispen-saries in primary units, each having two emerge ncy and two materni ty beds	No.of 30-bed hospital sin primary units	No. of se-condary units	No. of 200-bed hospi-tals in secon-dary unite	No. of 500-bed hospi-tals in secon-dary units
1st year	5	200,000	5	1	1	1	-
2nd year	5	200,000	5	1	1	1	-
3rd year	5	200,000	5	1	1	1	-
4th year	7	280,000	7	2	1	1	-
5th year	10	400,000	10	2	1	1	-
6th year	13	520,000	13	5	1	1	-
7th year	16	640,000	16	7	2	1	1
8th year	19	760,000	19	9	2	1	1
9th year	22	880,000	22	11	2	1	1
10th year	25	1,000,000	25	13	2	1	1

48. This table is only meant to indicate, in a general way, the lines on which expansion may proceed. It may be pointed out that, in every province, except Orissa; there are districts, the populations of which fall short of a million. In some provinces the number of such

districts is more than in others. It is therefore suggested that, when the population of a particular district is covered by the scheme before the ten-year period has elapsed (say, for instance by the 6th or 7th year) the Provincial Government should devote the funds and trained personnel, which will thus become available, to advance the programme in one or more of the densely populated districts. Such expansion may with advantage proceed first in industrial areas.

49. In developing the programme on the lines indicated in the above table it must be remembered that the population covered by the scheme will depend upon the number of districts in individual provinces. For instance, in Madras Presidency, the population at the 1941 census was 48.56 million and the number of districts 24, while, in the United Provinces the corresponding figures were 55.02 million and 48 districts. At the end of the first ten years, the population over which the scheme will extend in Madras will be 24 millions. On the other hand the population covered by it in the United Provinces will be 48 millions. In the case of Madras, provision would therefore have been made for a little less than 50 per cent of the inhabitants while, in the United Provinces, the proportion of population served by the scheme would be much higher. There may also be other divergences. In the Punjab, for instance, the number of districts is 29 while the population at the 1941 census was 28.42 millions. Therefore, even allowing for some increase in the population by the end of the ten-year period, the scheme, if developed on the lines indicated above, will include within its scope practically the whole population. A proposal which, in its practical application, shows such widely divergent results in different provinces may possibly be open to criticism as laying upon certain provinces, a comparatively heavier burden than upon others. Examples are the Central Provinces, the North-West Frontier Province and Assam which fall within the same category as the Punjab as regards the proposed expansion of the health programme but have much smaller revenues than the latter. We therefore suggest that individual provinces may proceed to implement our proposals on the basis of providing, in each case, for at least half the population by the end of the first ten years (appendix 4). In appendix 5 we have attempted to show how the different provinces may adopt this suggestion in their respective areas. We would, however, deprecate this recommendation of ours being interpreted as a suggestion that the rate of progress in the expansion of the scheme, over as wide an area as possible, should be delayed in those provinces in which the availability of funds and of trained personnel would make more rapid progress possible.

Certain Other Aspects of our Proposals

50. We shall now proceed to examine certain aspects of the programme in greater detail and to make specific recommendations in respect of them for each of the two quinquennia constituting the ten-year period. In doing so we shall confine ourselves to personal health services. Other recommendations such as those relating to professional education, environmental hygiene and medical research will be dealt with elsewhere, as also the subject of industrial health.

Hospital Provision

51. Some idea of the provision proposed under our scheme for general medical relief in the eleven Governors Provinces may be

obtained from appendix 5. A number of dispensaries with four beds in each and of 30-bed and 200-bed hospitals will be established in the provinces during the first five years of the scheme. During the second five-year period the number of 30-bed hospitals will be doubled. Each of these hospitals will thus serve two primary units instead of four. The 200-bed hospitals, attached to the secondary units functioning in the first six years, will be enlarged to include 500-beds and the new secondary units which will be created in the next four years will have their 200-bed hospitals. The anticipated numbers of these institutions are shown below: —

ELEVEN GOVERNORS' PROVINCES

	No. of dispensaries with four beds in each	No. of 30-bed hospitals	No. of 200-bed hospitals	No. of 500-bed hospitals
End of the first six years	2,293	639	216	Nil
End of the ten-year period	3,905	1,990	216	139

52. The distribution of beds in a 200-bed hospital is shown below:—

	No of beds
Medical	45
Surgical	55
Maternity	30
Infectious diseases	20
Pediatrics	15
Malaria	10
Tuberculosis	10
Mental diseases	10
Leprosy	5

53. The corresponding numbers of beds in a 500-bed hospital will be approximately two and a half times these figures.

54. For tuberculosis, mental diseases and leprosy separate provision is being suggested in special institutions". Even so, a few beds will have to be included in secondary unit hospitals and these will provide material for teaching and research purposes.

55. The total new provision for hospital beds of all types resulting from the proposals outlined in this note will be 109,725 and 279,820 at the end of the first five and ten years respectively. (See appendix 6). The existing number of beds in British India *is* somewhere about 73,000 so that the figures for total hospital accommodation at the end of the two periods will become:—

at the end of the first five years	182,782 or Approximately 183,000
at the end of the first ten years	352,820 or Approximately 353,000

On the assumption that the average population of British India storing the first five years of the programme will be 315 million and

during the second five years 337.5 millions, the ratio of beds to population will be as follows, if our programme is adhered to:—

Beds per 1,000 *populations*

At present	End of five-year programme	End of ten-year programme
0.24	0.55	1.03

The first five years will see an increase of over 100 per cent and by the end of ten years the provision will have become more than four times the present figure.

Certain Special Health Services

56. Our recommendations under individual heads such as malaria tuberculosis etc., are discussed in detail in the sections dealing with these diseases and therefore only the briefest possible reference is being made here to each of them.

Malaria

57. The importance of malaria, as a community problem, necessitates as much concentrated effort for its control as the availability of funds and trained personnel will permit. The general plan that we propose is the creation of an organization at the headquarters of each province for the administrative control of all malaria operations in the province as a whole, of smaller regional organisations numbering about five in the larger provinces and of a number of malaria control units, each under a medical officer with malaria training, for the active prosecution of anti-malaria measures in the affected areas. The details of the staff suggested for each of these three types of establishments are given in appendix 14. It is recommended that, during the first five years, the headquarters organization and ten control units should be established in each province and during the second quinquennium 15 more such units and two regional organisations.

Tuberculosis

58. Under this head our proposals include the following: —

(a) *Institutional service*

The first five-year period: —

(1) The creation of a 200-bed tuberculosis hospital for each unit of 10 million populations.

(2) The establishment of a large clinic (to be designated "Main clinic"), with facilities for the training of medical and non-medical tuberculosis personnel, at each of the places where the 200-bed hospital is established.

On the assumption that the population of British India will be about 330 millions by the time the first five years of the programme are completed, the numbers of hospitals and main clinics required will be 33 respectively.

(3) The creation of clinics of a smaller type at the headquarters of each district in British India; the total number required, after deducting the 33 main clinics, will be 183.

The second five-year period: —

(1) 33 more 200-bed hospitals.

(2) 33 more main clinics at the same places where the new hospitals will be located.

(3) 183 more district clinics.

(b) *Training facilities.*

At present the number of places, where facilities can be developed within a short time for the training of tuberculosis workers, medical and non-medical, is limited to five in British India. It is proposed that these should be supplemented by seven more training centers in the provinces during the first five years of the programme. During the next five years each of the 200-bed hospitals and each of the main clinics in association with it will form a training centre, thus providing 33 additional centers. There will therefore be 45 training centers in all working throughout the second quinquennium. It is also anticipated that, of the 33 new areas where a 200-bed hospital and a main clinic will be established, about 20 may be able to function as training centers during the last two years of the period.

We are advised by a special sub-committee of tuberculosis experts which we appointed that about 13,000 medical men will require special training in tuberculosis in order to meet the needs of the country. As regards public health nurses we have already stated our view that the same nurse should, when visiting the homes of the people, carry out such preventive and curative duties as may be necessary in respect of tuberculosis, maternity and child-welfare, school health and other branches of health activity. It will thus be seen that the number of nurses required to be trained in tuberculosis work will be considerable A rapid expansion of training facilities has, therefore, been suggested in order to meet this need for large numbers of trained doctors and nurses.

Nutrition

59. We recognize the supreme importance of nutrition in the public health programme. At the same time we realize that the raising of the nutritional status of the community to a desirable level involves the solution of many problems which go beyond the sphere of the health administrator. These include measures directed towards improving agriculture, animal husbandry, fisheries, marketing and food administration and the economic condition of the people, in order to place a balanced and sufficient diet within the reach of the masses in the country. We recommend that the immediate measures to be undertaken in the health sphere should include the creation of nutrition sections in the health departments of Governments and the feeding of children in schools. The latter should be a charge on the budgets of Provincial Education Departments. Details regarding the proposed nutrition section are given in appendix **7.**

Maternity and Child-Welfare

60. Provision for maternity and child-welfare work forms and in tegral and indeed as we have emphasized, a vital part of the district health organization outlined in this chapter. Each primary unit will be divided into four circles, one of them being associated with the headquarters of the unit. For each Circle the staff concerned with

this branch of health activity will be a public health nurse, a midwife and a trained *dai.* The supervision of this staff will be carried out by the woman medical officer attached to the unit. The provision for institutional service will consist of two maternity beds in the dispensary at the headquarters of each primary unit and six beds for the same purpose in each 30-bed hospital serving a group of such units. In each of these 30-bed hospitals there will also be provision for four cots for children.

At the headquarters of the unit and of each of the remaining three Circles will be established a maternity and child-welfare centre which will form the focus from which the health care of mothers and 'children will be carried into the homes of the people. The welfare centers will hold a weekly clinic at which as many expectant and nursing mothers, infants and children as can be persuaded to come, will be given medical care, suitable supplementary food and health education. The woman medical officer will conduct the weekly clinic at the headquarters of the primary unit and will visit the other three centers once every fortnight. Alternate clinics in these centers will be conducted by the public health nurse who will carry out certain routine examinations and treatments under the guidance of the woman doctor.

School Health

61. We have conceived our school health programme on a wide basis, and have therefore considered it necessary to include in it not only the detection and treatment of the child's physical defects, but also the promotion of its general sense of well-being through the provision of better nutrition, through proper physical training and the inculcation of healthy habits. Our scheme provides for the training of two teachers from every school for the carrying out of certain special health duties to be assigned to them.

In order to work out the administrative and technical details of the programme, we have suggested that the scheme should first 'be developed in the field training centre associated with the medical college at the headquarters of each province, that it should later be extended to the headquarters of the secondary units in each district and, at a still later stage, to the headquarters of each primary unit.

Dental Service

62. It will not be possible to develop even the beginnings of **a** dental service during the first five years of the programme because of the total inadequacy of existing dental personnel. If our scheme of dental education should proceed satisfactorily it would be possible to organize dental service *on* a modest scale during the next five years. Certain proposals for such a service are made below, although it is recognized that they may materialize in complete form only towards the close of the first ten years of the short term programme.

(a) Every 500-bed hospital at secondary unit headquarters (139 in all)—

Staff:

Officer in charge of Dental Section	1
Orthodental Surgeon	1
Dentists	3
Dental Hygienists	5

(b) Every 200-bed hospital at secondary unit headquarters (216) in all)—

Staff :	
Orthodental Surgeon	1
Dentists	2
Dental Hygienists	4

(c) A mobile dental organization for each secondary unit—

Staff:	
Dentist	1
Dental Hygienists	2
Attendant	1

The number of these mobile organisations, at the end of the first ten years, will be 710.

Venereal diseases

63. The formation of an adequate plan for dealing with this problem is complicated by the fact that very little reliable information is available regarding the incidence of these diseases in the community. The development of our health programme and the consequent expansion of treatment facilities as well as special sample surveys by the health authorities are essential before we can get a fairly clear picture of the prevalence of infection in the population. In the meantime the immediate measures to be undertaken should include the following:—

(1) There should be in every province a Chief Venereal Diseases Officer with a suitable establishment on the staff of the Director of Health Services;

(2) Each district headquarter hospital should be provided with a clinic on the premises;

(3) For each secondary unit hospital there should be a provision of Rs. 2,000 per mensem for the purchase of drugs for use at this hospital and at the other hospitals and dispensaries in the area for which it is responsible.

The details of expenditure in connection with these proposals are given in appendix 8.

Mental diseases

64. Our proposals are: —

(a) the creation of mental health organisations as part of the establishments under the Director General of Health-Services at the Centre and of the Provincial Directors of Health Services;

(b) the improvement of the existing 17 mental hospitals in British India and the establishment of two new institutions during the first five years and of five more during the next five years;

(c) the provision of facilities for training in mental health work, in India and abroad, for medical men and for ancillary personnel in India; and

(d) the establishment of a Department of Mental Health in the proposed All-India Medical Institute.

The details of expenditure are given in appendix 9. Leprosy

65. We have made the following proposals for extending anti-leprosy work in the country:—

(1) the establishment of a Central Leprosy Institute of India;

(2) the creation of Provincial Leprosy Organisations;

(3) increase in the existing provision for institutional treatment, namely, about 14,000 beds by an equal number in the first five years and a similar number in the second five years;

(4) Development of group isolation colonies and

(5) Substantial financial help to voluntary organisations engaged in anti-leprosy work.

Appendix 10 gives the details of expenditure under these heads.

66. The number of doctors and of nurses, required under our scheme, is given below. Details are given in appendices 11 and 12 respectively: —

	First five years.	First ten years
Doctors	15,043	29,314
or approximately	15,100	29,400
Nurses (including public health nurses)	32,510	80,362
or approximately	32,600	80,400

67. We propose that the fully trained public health nurse should, as far as possible, replace the health visitor in our organization. The present day health visitor is imperfectly trained for the duties that a woman worker of this type is expected to perform. At present the courses of training undergone by a health visitor consist of training in midwifery, which extends in different provinces from one year to a year and a half, and special training as a health visitor, which again lasts in different places from nine to eighteen months. The general education (standard required also varies from the lower middle school grade to the matriculation. Only a very limited number of persons with training in nursing enters the schools for health visitors. On the other hand, the public health nurse we propose-will have the full nursing qualification, including midwifery, and will, in addition, have been trained in a field training centre so as to develop the community outlook and experience in domiciliary service. It is only through the provision of such a type of woman worker that remedial and preventive health work can be dovetailed into each other and that a domiciliary service, including nursing in connection with the treatment of disease, can be developed. In our long-term programme we have outlined the main features of such a scheme, which we consider essential for an effective campaign against child morbidity and mortality as well as for safeguarding the health of women.

Numbers of Doctors and Nurses required

68. We have given above only the figures for the number of doctors and nurses who would be required under the proposals we have outlined. These have been taken as examples to demonstrate the magnitude of the task involved in providing adequate trained personnel for the development programme. As regards doctors, the existing numbers, the figures for those who are expected to be made available under the training programme outlined elsewhere in this report and the numbers required for each of the two periods of expansion under consideration are given below: —

Number of doctors for British India

		Graduates	Licentiate.	Total
Existing numbers (approximately)		18,200	29,200	47,400
Expected to be made available (Approximately)	1st five years	4,665	3,660	8,225
	1st ten years	16,350	5,572	21,922
Numbers required under our proposals (approximately)	1st five years	15,043	....	15,043
	1st ten years	29,314	....	29,314

So far as doctors are concerned the number required can thus be made available for the requirements of our short-term programme.

69. As regards nurses her position is much worse. The relevant figures are given below: —

	Number of nurses for British India
Existing number (approximately)	7,000

	During the first five years	During the first ten years
Expected to be made available (approximately)	15,000	52,500
Number required (approximately), including public health Nurses	32,600	80,400

70. It will be seen that the numbers required cannot be made Available under the training programme that we have recommended. Our proposals require 100 training centers, each taking 50 candidates, for the first period and an additional 100 centers for the next period. We have assumed that at least 75 per cent of the girls who undergo training will complete it successfully and become available for public service. The expected numbers of 15,000 and 52,500 during the first and second terms can only materialize if (1) the first 100 training centers are started at least two years before the health organization begins to be established (this will ensure four batches of girls with a training of three years being made available during the first five years) and (2) if the remaining 100 centers are established during the first two years of the scheme in order to ensure that the second group of 100 centres will contribute its quota of nurses at the end of the last year of the first quinquennium.

71. In view of the large difference between the number of nurses required and the number available, we suggest that a third set of 100 training centers should begin to function before the third year of the second quinquennium. If the expansion in the training programmes for nurses suggested above can be carried out, 300 centers will provide about 11,250 trained nurses during each year of the third five-year programme. At the end of the first 15 years the number of nurses trained will be about 108,750 while our long-term programme envisages the employment of about 670,000

nurses. Although our training scheme may appear spectacular, it will be seen that the task of raising the number of nurses from the existing figure of about 7,000 to 670,000 will require an even more intensified effort in the subsequent quinquennia.

72. We must, however, sound a note of warning here. Although we have recommended liberal stipends for the trainees in order to attract the proper type of women, we feel that, in many parts of the country, important social changes will have to take place if the numbers required in our calculation are to be forthcoming. This factor introduces an appreciable measure of uncertainty into our estimate of the number that may become available for service. In these circumstances the employment of smaller numbers than those recommended in the different types of health organization under our scheme may be inevitable and even the utilization, in the initial period, of individuals with lower qualifications than those we have contemplated may be necessary.

73. Certain types of health workers such as" health assistants and hospital social workers do not exist at present while pharmacists (a more qualified type than the existing compounder) are also practically non-existent. Reference is made to these categories of personnel only to emphasize the importance of starting the training programme well in advance of the establishment of the proposed new health organization.

74. We have discussed in Chapter XVIII of this report, the subject of training hospital social workers. We consider it essential that a certain number of them should be attached to the hospitals associated with medical colleges to ensure proper undergraduate teaching in preventive medicine and public health. This type of trained worker is, however, non-existent in India today and we anticipate that the organization of proper training facilities for this class in the country will take the greater part of the first ten years of the programme. In order to establish such training facilities a beginning will have to be made by obtaining a few trained workers in this field from abroad by sending selected candidates from India for training to the United States and the United Kingdom and by developing Schools of Social Studies on the lines of the Tata Institute in Bombay. We anticipate that an appreciable number of hospital social workers is likely to be produced only in the third five year period of our programme.

Estimates of Cost

75. The non-recurring and recurring cost of all our proposals for the short-term programme, including the establishment of the personal health services described here, the creation and maintenance of the facilities for training health personnel which we have recommended and other items of expenditure, are given below separately for the first and second five-year periods of the programme. The figures for recurring expenditure include the cost of maintenance of capital works at 3 per cent per year. In each period the estimated capital expenditure will, it is assumed, be spread evenly over each of the five years. It is on this assumption that the maintenance charges have been calculated. The figures also include provision for repayment of loans to finance non-recurring expenditure. Provision has also been made for a leave reserve of officers and subordinate staff, at the rate of 10 per cent for men and 15 per cent for women.

Total estimated expenditure during first ten years of the programme: —

(In crores of rupees)

	Non-recurring			Recurring		
	First five years	Second five years	First ten years	First five years	Second five years	First ten years
	162 97	20002	362.99	170.10	331.42	501.62
Amortization Amount	-	-	-	25.76	74.64	100.30
Total recurring expenditure.	-	-	-	195.86	406.96	601.82
Average annual expenditure.	-	-	-	39.17	81.19	60.18
				(In millions)		
Average estimated population of British India				315	337.6	326.25
				R.s. A. P.	Rs. A. P.	Rs. A. P.
Annual per capita expenditure	-	-	-	1 4 0	2 7 0	1 14 0

District Health Unit

76. In the preceding chapter, we have described the larger controlling organization at the headquarters of each district. In our ten-year programme we are not recommending its inclusion because we do not consider that it will be essential during this period. The establishment of this organization should be commenced as soon as the greater part of individual districts becomes covered by the scheme,, because, at this stage, coordination of the activities of individual secondary units will become imperative in the interests of efficiency. Such an expansion of the scheme, we anticipate, will take place in the third quinquennium and the establishment of the controlling organization at the headquarters may therefore have to be taken in hand at the beginning of this period.

CERTAIN OTHER POINTS IN CONNECTION WITH OUR PROPOSALS

Field Surveys

77. We consider that a field survey is highly desirable in association with our programme of health development. Such a survey should cover all the more important facts relevant to the health of the area investigated, including information regarding existing facilities, governmental and other, for medical and preventive health services in the area. Further, as socio-economic factors are of importance in any study of community health, inclusion of information of this nature is also desirable. It will obviously be impossible for reasons of cost and because of the inadequacy of trained personnel to survey the whole area over which the scheme will be introduced in individual provinces. We suggest that the survey may be confined to the five primary units of each of two or three districts which can be selected as being more or less representative of the conditions prevailing over the province as a whole. The introduction of our programme in the areas concerned, should, however, not be delayed because the survey has not been completed.

We would also suggest that the Central Health Department should draw up a detailed programme for these surveys in order to enable provincial governments to carry out this preliminary study on

a fairly uniform basis. The training of the personnel employed for this purpose in the different provinces should also be uniform as far as possible. This will require that the training for such workers should be limited to a few centers. The All-India Institute of Hygiene and Public Health would be one such suitable centre for training. If, as has been suggested by some of us, Delhi Province is developed as a demonstration centre, it will also provide suitable facilities for the training of the survey personnel. A centre for South India can probably be provided in the Province of Madras through the combined facilities that the King Institute, Guindy, and the Madras Public Health Department can provide.

Housing Accommodation for the Health Staff

78. We consider it essential to provide suitable housing accommodation for the staff of the primary and secondary units and for the staff attached to the hospitals of different types which we have recommended. The total capital expenditure on the provision of accommodation is estimated at 48.10 crores during the first five years and 61.67 crores during the next five years. These are large sums of money but, in our view, the expenditure is fully justified. We consider the provision of accommodation essential in the interests of efficiency. Every health administrator is today faced with the problem of persuading doctors to settle in the villages. The absence in rural areas of the amenities that are generally available in towns, including housing and water-supply, and inadequacy of facilities for educating children are some of the factors retarding the flow of doctors from urban to rural areas. The same tendency is noticeable, though to a smaller extent, in respect of other types of health personnel. In the circumstances we consider that the provision of housing is fundamental to the success of our scheme. Without such provision it will be difficult to keep the staff contented and happy.

79. Nor need the expenditure of public funds on housing for the staff be a drain on the resources of the country. It would certainly be equitable to recover from the occupant a suitable rent which should in any case not exceed 10 per cent of the individual's salary. We think, however, that employees drawing Rs. 50 a month or less should be given free quarters.

Cooperation of the Health Services with other Departments of Government

80. We have already stressed the need for the national programme of reconstruction being developed on a broad front. In fact the advance that can be made in any one section of this front will largely depend on the progress made simultaneously in others. For instance, an improvement in the nutritional status of the people, their education, the spirit of cooperation developed among them will all help to supplement the activities of the Health Department in raising the standard of health of the people. In the circumstances we consider it important that, simultaneously with the inauguration of the health scheme, the reconstruction plans of other Departments of Government should be brought into operation in the same areas.

Village Communications

81. We must emphasize the vital importance of developing village communications in order to enable the health organization to offer

efficient service to the people. Without these our whole plan for the rural areas may either be paralyzed or lose much of its effectiveness. The staff of a primary unit should, in order To give efficient service, be able to move rapidly to every part of the area covered by the unit while effective supervision, on which depends the success of the scheme, would become impossible unless inspecting officers could visit all parts of their charge easily and frequently. Moreover, the economic life of the rural areas will be quickened by the establishment of closer relations with the towns and the earning capacity of the villager will be raised. The health and welfare of the village population largely depend on the development of rural communications and we would unhesitatingly support the need for giving priority of the highest order to such development, even at the expense of the projected programme of highways throughout the country.

Ambulance

82. The provision of ambulances for the transport of patients is an important factor in the improvement of the efficiency of the health services. For each 30-bed hospital two motor ambulances and one animal drawn ambulance have been provided. These will, however, prove of limited value if village communications remain undeveloped.

Travelling Dispensaries

83. In the more sparsely populated parts of individual provinces it may be found advantageous to provide travelling dispensaries in order to supplement the health services that will be made available to the people through the primary health units. The areas in which these travelling dispensaries should be provided and the extent of such provision are matters which can be settled only in the light of local knowledge and we must therefore leave it to Provincial Governments to work out the details.

The effective functioning of these dispensaries will also require the development of rural communications on the widest possible scale.

Utilization of the Buildings, Equipment and Personnel that will be made available from the Army after the war

84. The war, with all its attendant evils, may we hope be productive of some beneficial results. The needs of a modern Army have brought into existence a number of health services and the personnel, equipment and buildings connected with these can, in many cases we believe, be advantageously utilized in the development of our health programme. Anti-malaria units, hygiene squads, hospitals constructed for war purposes, military camps, large air fields in different parts of the country with all the necessary amenities such as roads, water-supply and lighting, motor vehicles of various types, should, we suggest be made available on easy terms for the development of the health programme throughout the country. Certain large camps situated at convenient distances from large cities and connected with them by good roads should prove particularly useful in developing institutions for chronic cases and incurables. Such institutions are, apart from their humanitarian aspect of special value for the training of medical students. At present, the pressure on beds in existing hospitals is so heavy that

chronic cases have little chance of being retained, as they have to make way for the continuous stream of new patients flowing into: these hospitals.

Medicinal spas

85. We understand that there are a number of thermal and other springs in different parts of the country, which are capable of development into medicinal spas. Some of these are centers of religious worship and we believe that their conversion to such use is not possible for many years to come. On the other hand, there are others which have no religious significance attached to them. The possibility of developing these should, in our view, be investigated by the Provincial Governments and by Administrations under the Central Government.

Establishment of field training centers in association with training institutions

86. In the section dealing with professional education we have dealt with the need for providing field training facilities for all types of health workers, medical and non-medical. We propose that the training centre for each college should consist of 15 primary units under the control of a secondary unit. In our view the provision of such training centers can advantageously be made by increasing, in those districts in which medical colleges already exist or will be established, the five primary units proposed for every district at the initial stage of our programme to the required number of fifteen units with the least practicable delay. The establishment of these training fields in association with teaching institutions will thus help to extend the new health services to further sections of the population.

Delhi Province to be developed as a Demonstration Area

87. In the proposals outlined in this chapter we have confined our attention to the eleven Governors' Provinces. Conditions in the Centrally Administered Areas vary greatly so that any proposals put forward on uniform lines will not be applicable to them. The Delhi Province stands by itself among the Centrally Administered Areas and we' are giving it detailed consideration in a separate chapter. Some of us are definitely of the view that the Central Government should make this Province a demonstration area by implementing the proposals of the Committee as well as those of other Committees which have put forward schemes for post-war reconstruction. So far as our proposals are concerned, we feel that they make such a departure from existing practice in the fields of health administration and professional education that a demonstration of the way in which our programme can be carried out effectively will be of the greatest value to the Provinces in developing their programmes.

88. As regards the other Centrally Administered Areas we feel that the proposals outlined in this and the previous chapter should provide sufficient material to enable local administrations to develop plans suitable to their individual territories.

CERTAIN OBJECTIVES FOR THE THIRD FIVE-YEAR PROGRAMME

89. We have already stated that it will be difficult to formulate definite plans beyond the first ten-year period. For reasons we have

already discussed the rate of progress in the proposed expansion of health services is bound to vary in individual provinces. A programme for the succeeding five years must naturally be based on what has been achieved during the preceding period. Any suggestions we may put forward therefore for the third quinquennium can have relevance only as a general guide to Provincial Governments, Due regard will have to be paid to what has been accomplished in individual provinces and the proposals for the third five-year term, which we give below, may in consequence have to be modified. We may emphasize that only certain broad suggestions are being put forward.

Third Five-Year Term

(1) Hospital accommodation to be raised to 2 beds for every one thousand of the population.

At the end of the first ten years our scheme provides for one bed per 1,000 population.

(2) Expansion of the scheme so as to cover three-quarters of the population of individual districts, wherever possible.

(3) The creation of *12* new colleges in addition to the 43 to be established during the first 10 years.

(4) The establishment of a fourth set of 100 training centers for nurses.

(5) The training of 500 hospital social workers.

90. There are two questions which might perhaps be suitably dealt with at this stage. These are:—

(1) Is it wise to save those who are physically unfit, either through inherited disabilities or through faulty development, by interfering with nature's process of elimination?

(2) By reducing morbidity and mortality through a national health programme may we not be aggravating the existing pressure of population on the nation's resources, a pressure which many are genuinely apprehensive has already become too heavy for the country to bear?

91. We recognize that it is not easy to provide complete and satisfying answers to these questions. Nevertheless, we feel that, as the fears and misgivings implicit in them cannot escape the attention of thoughtful men and women. it is incumbent on us to set' forth our views.

92. From day to day we are faced, as individuals or as a community, with the necessity for taking decisions in respect of courses of action which are charged with the potentiality of producing results, both good and evil. In taking such decisions our safety seems to lie in following those moral and ethical ideas which mankind has been developing through the ages as the basis of social justice. If we do so we must come to the conclusion that there can be no going back and that we must press forward with our programme of health development, although it must be admitted that we do not see at present how we shall steer clear of certain dangers which appear indistinct but ominous in the distance.

93. In regard to the first question, we may say that, in the experience of countries where community health programmes have functioned for some time, the purposeful saving of lives, which might otherwise have been eliminated, has not, to our knowledge, been accompanied by any recognizable signs of a deterioration of the national health. It is on infant life that environmental and other adverse conditions produce the greatest possible harm and the question under consideration can perhaps be studied best in relation to this section of the population. We may quote here the remarks of Sir Arthur McNalty, a former Chief Medical Officer of the Ministry of Health, England, in his annual report for 1936, as that country is the one with the longest record of national effort for the improvement of the health of the people. He says: —

> "In last year's Report, speaking of the difficulty which must confront continuous reduction of the rate of infant mortality, reference was made to the view that, under modern conditions, some weakly children survive the first year who, a generation ago, would have perished soon after birth. That such case happens and that, in the aggregate, their absolute number may be large, is a proposition which one would have supposed to be indisputable. Nevertheless, some readers have seen in this statement support of the obsolete theory that national vigor is impaired by saving the lives of the "unit"— *i.e.,* of those who perished under a particular environment. According to the adherents of this doctrine environmental measures calculated to save the lives of the "unfit" would have the result of decreasing the average stamina of survivors and so lowering the resistance of the population at later ages. As Sir Arthur Newsholme has frequently pointed out, decline in rates of mortality at ages after infancy has not slackened since infant mortality began to fall. In the Annual Report for 1933 (pp. 17-24) Sir George Newman also drew attention to the enormous improvement in the rates of mortality in early childhood and adolescence. Thus at ages 1-2, 2-3, 3-4 and 4-5, the rate of mortality in 1926-32 was less than one-quarter of the corresponding rate in 1861-70 and less than one-half the rate of 1901-10. Even in the years of adolescence, 15-20, where some slackening in the rate of decline is observed the death rate in 1921-30 was only 39 per cent of that registered in 1861-70. So far then as rates of mortality are to be trusted, it is certain that the spectacular fall of infant mortality within this century has not been associated with any deterioration of mortality rates at later ages. That improvement of the environmental conditions of infancy has been at the expense of later ages, is a proposition unsupported by any evidence."

94. In Sir Arthur McNalty's view therefore the active pursuit of measures for improving the health of the weakest and most vulnerable -section of the community has not resulted in a lowering of the health of the nation. Further, so far as the moral and psychological aspects of the question are concerned, we feel that we shall be justified in

claiming that it is compassion for the sick, the helpless and the weak that will eventually become the bond for welding humanity into one homogeneous whole.

95. It may sometimes happen, as in the case of the poet Keats that it is the frail body that harbors within it the finest flower of the human spirit. Shall we not be right in demanding that Nature-shall not be permitted to eliminate, in her ruthless May, such persons, whose contribution to the sum total of human happiness may prove to be of the highest type?

96. As regards the population problem, we have devoted a specials chapter to it and "discussed "there the possible consequences of large-increases in population and certain suggestions for dealing with them.

97. The minute of dissent which follows this paragraph, is mainly critical and not constructive. It only recommends that there should be "as even a distribution 'of facilities accruing from increased personnel, accommodation and equipment; as requirements of special institutions; geography and density of population may permit". We consider that such a recommendation is far too nebulous to be of any practical value to health administrations in the country. Further, if it is accepted[1] and acted upon by these administrations, the result may be a congeries of unplanned accretions' to the existing organisations for medical relief and preventive health work and we are doubt whether any appreciable improvement in the public health will be-effected. On the other hand we believe we are right in claiming that, in the scheme we have put forward, we. are advancing a new conception of health development in the-place of the existing system-of curative and preventive health services functioning, to a large extent, independently of each other with results" which are far from satisfactory. We have recommended a scheme which will, from the beginning, promote the development of remedial and preventive health work on a unified basis as well as provide for an integrated' institutional and domiciliary service to the people. In all progressive-countries these requirements are considered essential for a modern health organization. We therefore consider that the acceptance, of the recommendation made in the minute of dissent will result in preventing or postponing indefinitely the development of an efficient health service in the 'country and in securing no adequate return for the large outlay of money and effort involved in the training of health personnel and in the establishment of institutions under the scheme.

We cannot also permit a statement made in the minute of dissent to pass without comment. They say that we have favored the establishment of the scheme in a limited area, in the first instance, on the following two grounds: —

(1) That the existing personnel lacks the training to make preventive medicine an integral part of medical relief.

(2) That zoning of the operation of the proposed system of medical relief is essential for demonstration of expected results.

As regards (1) above, there seems to be no fundamental difference of opinion between them and the rest of us. They have suggested short courses of training for medical men in order to equip them for combined duties in the fields of medical relief and preventive-work. From Para. 22 of this chapter it will be seen that the

recommendation of the rest of the Committee is the same. The need for such training, if any scheme of health development is to be worked successfully, is therefore accepted by all. But the existing medical personnel with such training, supplemented by those likely to be made available through the training programme of the short-term, cannot possibly suffice to extend the health organization over the country as a whole. It therefore seems inevitable that a health programme such as the one we recommend must be implemented in stages.

As regards (2) above, we have recommended no zoning of each district into two areas in the sense understood by the writers of the minute of dissent. If the necessary funds and staff are available there is no reason at all why individual Governments should not proceed beyond the programme which we have drawn up as a general guide to the provinces. We have, indeed, recommended such expansion in the last sentence of Para. 49 of this chapter.

A Note on Medical Belief by Dr. Vishwanath and Dr. A. H. Butt

The scheme recommended will split up medical relief into two parts. To start with the scheme will cater for only one-fifth of the population of each district and eventually may come to serve half of the population. It is supposed to absorb almost all the output of medical personnel from training institutions as well as the great bulk of finances. Almost all the up-to-date buildings, equipment and well-trained personnel will be located in the area of operation of this scheme. During the short-term programme the major part of the country will still be served by the existing organization. Disparity of amenities provided in the two areas, will be too flagrant to escape public notice. Acute discontent and resentment is bound to | prevail in the areas left outside the service provided by this short-term scheme.

Concentration of improved facilities in selected regions seems to be favored on two main grounds: —

(1) That the existing personnel lack the training to make preventive medicine an integral part of medical relief.

(2) That zoning of the operation of the proposed system of medical relief is essential for demonstration of expected results.

We regard these considerations invalid and inappropriate. In our opinion the registered medical profession in India is as well informed, as its counterpart in any other country in the world. Its weakness is mainly quantitative and not qualitative. Its service element can be easily oriented to the performance of combined functions in the fields of Medical Relief and "Public Health by attending short courses of instruction organized for the purpose. Instructions so obtained can later on be implemented by directions imparted through circulars, inspecting officers and short visits to headquarters at stated intervals, where later developments in techniques can be demonstrated by higher officers of Medical Relief and Public Health Departments.

As for the value of zoning for demonstrating results, we must state that we are strongly opposed to making any areas or population into experimental units. No system of medical relief or preventive medicine should be applied to the people, the results of

which are not already proved to be beneficent to an eminent degree. This application must be as wide and uniform as the resources of the State in material and personnel permit, at a given time. The existing machinery of medical relief, however, inadequate and un-satisfactory is not ill-suited to furnish the foundations for evenly spread improvements. The scheme proposed by the majority will establish diarchy of medical administration in each district. Between the existing arrangements which will be operative over the major part of a district and the new on which will be showered all available facilities of personnel and equipment, there is bound to be considerable friction which will react detrimentally on the volume and quality of the social service. We advocate as even a distribution of facilities accruing from increased personnel, accommodation and equipment, as requirements of special institutions, geography and density of population may permit.

CHAPTER V

THE NUTRITION OF THE PEOPLE

Introduction

1. In view of the great importance of the subject we considered it necessary to obtain the advice of outstanding nutrition workers in the country before formulating our proposals. The Indian Research Fund Association has a Nutrition Advisory Committee of which the Chairman is the Public Health Commissioner with the Government of India, and the Secretary, the Director of the Nutrition Research Laboratories, Coonoor. The members include most of the important laboratory workers in the subject in different) parts of the country, public health officials actively engaged in nutrition work and certain officers of the Government of India such as the Agricultural Commissioner, the Animal Husbandry Commissioner and the Educational Adviser. At our request, this Committee prepared a valuable report on the subject and, in the succeeding paragraphs; we shall freely quote its views.

2. We fully endorse the view of the Committee that the national health campaign is concerned not only with the prevention of disease, but also with the development of a healthy and vigorous population and that improved nutrition plays an important part in preventing sickness as well as in promoting positive health. To quote from its report:

"The modern public health movement is not concerned solely with the prevention of disease. It has the broader aim of creating an environment in which each individual can develop his potentialities fully and completely. This is particularly true as regards nutrition. Malnutrition produces states of ill health and lowered physical efficiency, short of actual disease, which are perhaps more important, because more widespread, than disease itself. Numerous investigations among school children in India have shown that a large percentage of children are in a poor state of nutrition, with consequent impairment of physical and mental growth. Again, in the adult population the ill-effects of malnutrition are widely evident in the shape of a low level of general health and reduced capacity for work. On the other side, the striking improvement in the condition of army recruits which takes place after a few months of abundant and satisfactory feeding, is highly significant.

"The positive aspects of the campaign for improved nutrition must be strongly emphasized. Freedom from disease is one thing, abundant health is another. The goal to be aimed at is the creation of a healthy and vigorous population."

The Nutrition Problem in India

3. We have discussed, in our review of the subject in the previous volume of the report, the average Indian diet and pointed out its many deficiencies. We may, however, refer to the matter again here briefly. There is reason to believe that both under nutrition and malnutrition exist widely in the country. The daily energy requirements of an adult of either sex, living an ordinary life without manual labor, has been estimated at 2,400 calories to be derived from the food that is assimilated. Those who do mode-

rate work require 2,500 to 2,600 calories, and those who are engaged an occupations involving heavy manual work require about 2,800 to 3,000. In Health Bulletin No. 23, The Nutritive Value of Indian Foods and the Planning of Satisfactory Diets, (1941), an insufficient and ill-balanced diet giving only 1,750 calories per day is described by Dr. Aykroyd, the Director of the Nutrition Research Laboratories, Coonoor as "typical of diets consumed by millions in India". It is clear that from the point of view of energy requirements, such a diet as quite insufficient.

4. The quality of a diet depends on its being able to provide certain essential chemical entities in proper proportions. They are (1) carbohydrates, (2) proteins, (8) fats, (4) minerals and (5) vitamins-Carbohydrates form the main energy-yielding element in our diet. Wheat, rice and other cereals form cur chief sources of carbohydrates. Sugar is another. Proteins are an essential constituent of our food as they are utilized in building up the body and in replacing tissue waste. They may be of animal or of vegetable origin. Speaking generally, the former are more valuable than the latter. Their "biological value" is said to be high and they are often called first class proteins. Our chief sources of animal protein are milk, eggs, fish and meat, while the pulses constitute important sources of vegetable protein. A certain proportion of the total intake of protein should consist of first class proteins, if the diet is to be considered satisfactory from the nutritional point of view. All over the world, the production of articles of food, providing animal protein for human consumption, is recognized to be more costly than the production of articles containing vegetable proteins. Fats are generally available to us either in the form of ghee or butter, of vegetable oils or of the fat of animals derived from meat and fish. In order to obtain a sufficiency of the different minerals required by the human body, the consumption of a variety of vegetables is necessary. Vitamins are considered essential for the proper utilization of food and for the satisfactory functioning of the body. While they are found in the different articles of food we consume, laboratory methods of production have more recently been developed in respect of a number of these vitamins.

5. From the point of view of quality, the main defects of the average Indian diet are: an insufficiency of proteins (in respect of both total intake and of first class proteins), of mineral salts and of vitamins. Rice is the staple cereal over large parts of the country, and in the rice-eating areas the consumption of pulses, which provide vegetable proteins and certain vitamins, and of milk, eggs, fish and meat is definitely low. The consumption of vegetables and fruits is also much below the desirable level. Lastly, the average rice-eater's diet does not include a sufficient quantity of fat of vegetable or animal origin,

6. We shall first deal with the main question of raising the dietary standard of the people, and later make certain recommendations in respect of two closely associated problems, namely, control of (1) the purity and (2) the quality of the food supply of the community.

General Measures

7. The general raising of dietary standards throughout the country is, as pointed out by the Nutrition Committee basically

"an economic problem, the solution of which is dependent on the scientific development of agriculture, animal husbandry and fisheries, and the simultaneous development of industrial resources. Economic surveys have shown that the poorer sections of the community cannot afford to purchase a nutritionally adequate diet; they have also shown that with rising income the diet becomes more satisfactory and approaches more closely to approve nutritional standards. An increase in the prosperity of the country, associated with a rise in agricultural production, will thus automatically produce a general improvement in nutrition. It is not. However, sufficient to point out that the latter is dependent on, and will follow, a change for the better in economic conditions. Agricultural and economic policies must be established which have as their primary objective the betterment of diet. A food policy is necessary, and this must be firmly based on nutritional science."

8. We suggest that Provincial Governments should place before themselves the objective of meeting their essential food requirements from their own territories to the utmost extent to which this may be possible. The Nutrition Committee points out that "The United Nations Conference on Food and Agriculture (1943) accepted the principle that governments are responsible for introducing general and specific measures for improving the diet of their people. The Conference in addition to making recommendations about the feeding of "vulnerable" groups, the necessity for education on nutrition, etc, broadly outlined the method of approach to food policies designed to improve nutritional standards. Its views may be summarized as follows: —

"The first step, in planning nutritional problems, is to estimate the average consumption of the various foods by the population concerned, preferably on a *per capita* basis. The rough data about food intake so obtained should be checked by family diet surveys. The state of nutrition of the population should be investigated by medical and public health workers. In this way the defects of the national diet will be made manifest. The adjustment of agricultural and economic policy to correct the defects follows.

"On the question of dietary standards, the Conference made the 'following recommendations: —

"That governments and authorities here represented adopt as the ultimate goal of their food and nutrition policy, dietary standards or allowances based upon scientific assessment of the amount and quality of food, in terms of nutrients which promote health and distinguish clearly between these standards and the more immediate consumption goals which necessarily must be based upon the practical possibilities of improving the food supply of their populations.

"Because of the inaccuracy of existing food production data, it is impossible to indicate precisely the increase and changes in food production which is necessary to raise the diet of the population to a satisfactory level. Nutrition workers can, however, lay down standards for requirements of the various important foods which can be used as the basis of All-India or provincial food policies-

"The ultimate objective should be the provision of an optimum diet for all, irrespective of income, and plans should be laid to reach the objective by forced march, stage by stage, within a specified period of time. The governmental machinery at the centre and

in the provinces necessary to plan and execute food policies cannot be considered in this report. In view of the inequalities in the production and consumption of various foods in different parts of the country, technical and financial assistance from the centre and co. ordination of provincial effort are obviously desirable. The distribution of food, with the various problems it involves, is as important as its production.

"It is the responsibility of nutrition workers to assess the food-requirements of the population on a satisfactory basis. The infinitely more formidable task of fulfilling these requirements lies beyond their sphere of action. It would be outside the scope of this report, to discuss the scientific development of agriculture, animal husbandry, fisheries, the mechanization of farming, irrigation schemes, co-operative societies, consolidation of holdings, the need for the large scale manufacture of fertilizers, rural transport, and other questions of equal importance which bear on the problem of increasing food supply and raising dietary levels. Close contact between nutrition workers and those concerned with food production in its various aspects is, however, vitally necessary, if food planning is to be developed along satisfactory lines. Special emphasis may be placed on contact between nutrition and agriculture, animal husbandry and fisheries. Nutritional advice is required in connection with crop-planning, the production of new varieties of seed, and' numerous other matters. The activities of central and provincial food administrations, both during the present period of food shortage, price control and rationing and in the future when progressive plans are being developed, should be guided by advice and assistance from nutrition workers.

Specific Measures for Improving Nutrition

"(A) *Nutrition work in Public Health Departments.*—Public health nutrition work is as important as other activities of public health departments, such as the prevention of epidemics, the disposal of sewage, etc. It follows that health organisations must be extended so as to include work in the field of nutrition among their recognised functions.

(a) Nutrition work in the Central Health Department.—The Central Public Health Department should include a highly trained nutrition specialist with wide experience of the public health aspects of the subject. The specialist will be on the one hand in touch with experts in other branches of public health in the Central Health Department and on the other with the central nutrition research organization, provincial nutrition sections, and research workers in the nutritional field. He should advise the Central Government on nutritional policy through the Director General of Health Services.

(b) Nutrition sections of Provincial and State Public Health Departments.—The section should be in charge of a nutrition officer of the rank and status of an Assistant Director of Health Services with a suitable staff. The staff required will depend on the size and population of the province, the extent of the problem of malnutrition, etc. The training and qualifications of public health nutrition workers will be considered later. The section should include a properly equipped and staffed laboratory. The following are among its-important duties and functions: —

(i) Study of the composition of foods of local importance.

(ii) Diet surveys.

(iii) Investigations of the incidence of malnutrition and deficiency disease and of any public health problems associated with nutrition which may arise.

(iv) Apart from these special lines of research, nutrition research generally may be included among the functions of the nutrition section.

(v) The section must pay special attention to the nutrition of vulnerable' groups, *e.g.,* infants, children, expectant and nursing mothers and students. It should work in association with such branches of public health as maternity and child-welfare and school medical inspection. The nutrition of industrial groups is also a question of great importance-

(vi) The section should serve as an information bureau on nutrition for the benefit of other departments and the general public, and be responsible for providing material for education and propaganda. It should advise about diet in public and private institutions.

(vii) Nutrition sections should be in close contact with food departments, educational departments, and agricultural, animal husbandry, fisheries and marketing departments. They should coordinate work sponsored by local bodies and private organisations.

(viii) A suitable duty of the nutrition officer will be to act as Secretary of the Provincial Nutrition Committee, referred to below. He must also maintain contact with nutrition research institutes in order to keep in touch with advancing research.

"In the public health departments of large municipalities nutrition work should be developed along similar lines, though no doubt on a smaller scale.

"While special emphasis is placed on the employment of specialized nutrition officers in public health departments and on the creation of nutrition sections, it is equally necessary that all public health workers should have a sound knowledge of nutrition. To this end their training must include satisfactory instruction on the subject. This is particularly important in the case of health workers at the periphery, *e.g.,* health visitors, health inspectors, etc., who are in direct contact with the people.

"(B) *Provincial Nutrition Committees.*—These committees, should include experts in nutritional science, agriculture, animal husbandry, fisheries, marketing, food administration, economics, etc., and advise governments on questions which concern the nutrition of the population. While their work should be essentially technical in nature, they may also include purely administrative officers, with the objects of securing co-operation in their activities from the administrative side.

"(C) *Deficiency diseases.*—the prevention of deficiency diseases is an important responsibility of public health nutrition sections. Deficiency diseases tend to disappear with a rise in the standard of living and a general improvement in diet, but it is not necessary to await such developments before launching the attack.

Specific methods can often be effectively used. For example, beriberi may be prevented by the distribution of pure vitamin B1, or by popularizing the consumption of certain kinds of rice, osteomalacia by the use of vitamin D or by changes in social habits involving greater exposure to sunshine, and goiter by the use of iodized salt. Each deficiency disease presents a specific problem of prevention and the most feasible and effective methods of approach can be discovered only by trial of different methods in various areas and groups. For the development and application of satisfactory preventive measures active public health nutrition sections are essential.

"(D) *The nutrition of expectant and nursing mothers and infants.*—these groups are especially vulnerable to the ill effects of malnutrition. If a child is to get a good start in life, its mother must be properly nourished, and it must itself receive a satisfactory diet during infancy and early childhood. Special attention must, there fore, be given to the needs of mothers and infants. In various Western countries measures are taken to supply additional nutritious food to expectant and nursing mothers of the proper classes and to provide cow's milk to infants for whom breast milk is not available at all or not available in sufficient quantities. It is the responsibility of public health departments, through maternity and child welfare services, to supervise the feeding of mothers and infants. The further development of such services, with special reference to nutritional activities, is much to be recommended. The approach to the nutritional problems with which they have to deal, and ways and means of making work on this field more effective, require more careful consideration than they have yet received and study of these questions will be among the most important activities of public health nutrition sections. In a later section of the report it is pointed out that expectant and nursing mothers and infants should have prior claims in the distribution of milk supplies.

"(E) *Community, Feeding.*—(1) *School-feeding.*—the development on a wide scale of school-feeding schemes is recommended by us elsewhere. This, as experience in other countries shows, would be of the greatest value in the attack on malnutrition and would give abundant returns for money spent in the shape of an improvement in the health of the rising generation.

"Ideally, school-feeding should include the provision of a suitable quantity of whole milk. But in view of the fact that whole milk is scarce and dear in most parts of India, recourse may be had to other foods. These include skimmed milk and sprouted pulses. Almost any wholesome food which supplies additional calories to under-nourished children is of value. At the same time, it must be recognized that as far as possible food or meals supplied in school should be such that they help to correct the defects in the home diet. If properly organized on this basis, school feeding may be of genuine value in educating children about nutrition and the importance of a well-balanced diet.

"School-feeding schemes should be organized by government and local authorities with the co-operation and advice of nutrition sections in public health departments.

"(2) *Institutional feeding.*—the satisfactory feeding of children in institutions is a simpler problem than supplying meals to day-school children, but it is one to which insufficient care and attention is often given by the authorities concerned. All children in boarding

schools, orphanages, etc., whether these are under state or private management, should receive an adequate and well-balanced diet. It has already been pointed out that the duties of public health nutrition sections include the giving of advice about feeding in residential institutions, *e.g.,* students' hostels, goals, reformatories, etc. as well as institutions for children.

"(3) *The feeding of employees and labor groups.*—In Europe and America great attention has been given to the diet of industrial workers, particularly during the war. At an Industrial Conference in Great Britain in 1943 it was recommended that the war-time measure of providing a balanced meal to industrial workers should be continued when the war is over. This is a question of importance in India, particularly in view of the fact that industry is now expanding rapidly. The establishment by industrial concerns of canteens supplying good food at low cost is to be recommended. In this connection mention should also be made of laborers on plantations and the secretarial staffs of large business houses. The need for improving the nutrition of workers must be impressed on all employers of labor. The furthering of such developments will be the combined responsibility of governments and employers, but stress may be laid in obtaining the advice of the health department.

"The extension of industrial canteens. etc., is eminently desirable in connection with existing food and rationing policy, and in full conformity with that policy. It facilitates food distribution and helps to satisfy the special food requirements of manual workers."

The Government of India, which is probably the largest employer of labor in the country, may well set an example in this matter for others to follow.

"(4) *The feeding of other groups.*—The provision of meals in common to large groups has the advantage of reducing wastage of food and consumption of fuel for cooking, with consequent reduction in cost. If organized on sound dietetic principles, it promotes good nutrition. During recent years the large scale community feeding of urban groups has been developed in Russia. The possibility of similar developments in the future in India, and the advantages referred to above, should be borne in mind. In the case of certain groups, *e.g.,* students in cities, properly organized communal feeding at reasonable cost is definitely to be recommended from the standpoint of nutrition

"(5) *Catering and nutrition.*—The provision of cheap well-balanced meals through agencies which supply food to the general population, *e.g.,* eating houses, hotels, etc., is of importance as part of the general campaign for raising levels of nutrition and would also be of considerable value. It would involve the education of those concerned in catering. Municipal health authorities, which exercise control over catering establishments, of various kinds through licenses, should do something to further such developments.

"(F) *Training and propaganda.*—this subject may be considered under various heads; (a) the education of specialized nutrition workers, (b) the education of those who will be in a position to educate the public or engaged in work in which knowledge of nutrition is of value and (c) the education of the general public.

"(a) (i) The question of the education and training of nutrition research workers overlaps with that of the education and training of

workers in other fields of medical and scientific research. It will not be considered here as we are concerned with other aspects of the subject of nutrition. It may, however, be pointed out, that active nutrition research, which implies a body of trained nutrition. Research workers, is necessary for progress.

"(ii) Specialized public health nutrition workers should receive-some training in research methods as well as a good grounding in-nutritional science, both in the field and the laboratory. They should have, at least, a year's training in an institution devoted to nutrition research and other branches of the subject. Some knowledge of statistical methods is desirable. They must also have experience of public health work in general and in particular experience of health[1] work in rural areas, to enable them to deal effectively with nutrition problems in the field.

"(iii) In the United States and other countries large hospitals employ dietitians, whose duty it is to organize and superintend the dietary treatment of patients under the supervision of the medical staff and to ensure that patients receive the best possible diet during their stay in hospital. In India, no developments in this-direction have as yet taken place, although existing dietary arrangements in hospitals are often unsatisfactory and more could be done to happen the recovery of patients, who are suffering from nutritional diseases. Moreover, hospitals provide abundant opportunity for nutritional research on a variety of clinical conditions.

"All large hospitals should employ a trained dietitian with high qualifications. Apart from highly trained specialists, two possibilities present themselves with regard to the training of workers to supervise dietary arrangements and treatment; (i) special courses on dietetics may be arranged for selected nursing sisters and (ii) graduates of domestic science courses who have taken a course in nutrition may be employed as dietitians after receiving training in nursing. The Domestic Science course in Madras University now includes a course in nutrition for candidates wishing to specialize in this subject.

"In the training of nurses in general, more attention should be given to nutrition. This would help to improve the nutritional' treatment of patients in small hospitals which cannot employ a full time dietitian.

"(b) (i) the medical profession has abundant opportunity of assisting in the attack on malnutrition and furthering the education of the public. At present, in the teaching of medical students, the-importance of diet in the causation of disease is not, however, given sufficient prominence. The orientation of medical studies, so that greater emphasis is laid on nutrition is necessary. So much disease in India is associated with nutritional factors that there would be every advantage in establishing professorships in nutrition in medical' colleges. This would promote research on the prevention and treatment of nutritional diseases and broaden medical education in the desired direction.

"(ii) Other professional groups which can play a part in the campaign against malnutrition include administrative officers in general, officers in food departments, school teachers and inspectors of schools, social and economic workers, workers in agriculture and animal husbandry departments, etc. Instruction about nutrition should form part of the normal training of such workers, its amount and kind naturally varying in the different professional groups in

question. A necessary preliminary is the education of instructors. It is suggested that special brief courses on nutrition should be given by nutrition research institutes and organisations to professors and teachers of various subjects interrelated with nutrition. Special emphasis may be placed on the instruction of teachers in teachers' training colleges.

"(c) All children should be taught simple facts about food and diet, as part of health education. It is the responsibility of central and provincial nutritional organisations to provide the necessary educational material and that of educational departments to impart it to children in suitable form. Attractive booklets, etc., written in English and the important Indian languages, should be prepared. The suggestion is made that in order to ensure the accuracy of educational material on nutrition provincial nutrition officers should be co-opted on text book committees. Reference has already been made to the educational value of school feeding.

"The importance of the education of the public in general cannot be too strongly stressed. Numerous methods can be followed. These include pamphlets, posters, bulletins, press articles, films, wireless talks, demonstrations, exhibits and museums. Instruction about nutrition should be included in adult educational courses. Here again nutritional and health education in general overlap. Provincial and state nutrition departments have an important part to play in developing educational and propaganda work among the adult population. Public health workers, in direct contact with the people, *e.g.,* health visitors, can render valuable assistance in the educational campaign.

"Local nutrition committees which include public spirited and influential citizens can further the efforts of provincial, state and municipal health departments to teach the people satisfactory dietary habits and spread knowledge of nutrition.

"(G) *Assistance from nutrition research institutes and workers.*— The development of the practical and public health aspects of nutrition must be largely the responsibility of public health nutrition sections. But nutrition research institutes and nutrition research workers in university departments, medical colleges, agricultural and veterinary research institutes, etc. have also an essential part to play. They must supply knowledge, guidance, and advice to ensure that full use is made of scientific discoveries and in general ensure that progress takes place along the right lines."

9. These recommendations of the Nutrition Advisory Committee cover a wide field. We fully endorse and recommend them for the earnest consideration of the authorities concerned, central and provincial.

CERTAIN OTHER MATTERS

(1) Special measures to increase the production of certain articles of Food:

Proteins

10. The average Indian diet is inadequate in respect of the quality and quantity of the protein consumed and one of the most difficult problems is that of raising protein consumption to the required level. Proteins of high biological value are of animal origin and, while figures for the consumption of meat, fish and eggs for this country are not available, it is known that the amount of these

articles eaten by the people is very low as compared with other countries. Their relatively high cost places them beyond the means of large sections of the population, particularly for daily use. Further, for certain sections of the community, they are of little or no dietary significance, and milk is the only important source of animal protein. The estimated consumption of milk is less than six ounces per head per day in the country.

11. While vitamin deficiencies of a pronounced character manifest themselves in various forms of disease, protein deficiency generally fails to declare itself as a specific departure from health, which can be detected by the clinician. It produces, at the same time, profound effects on the individual by a retardation of growth. lowered vitality and poor muscular efficiency. Farther, while most: of the vitamins can now be produced in the laboratory and the quantities required for daily consumption are very small, the solution of the problem of increasing protein consumption to the necessary level is much more difficult, as it involves such matters as an improvement of the breeding of live-stock, the raising of fodder crops, the development of the fish industry and, above all a gradual change in the social habits of many sections of the community to whom the use of meat, fish and eggs is forbidden by custom and religion. A raising of the level of protein consumption is, therefore, more difficult than the provision of adequate supplies of vitamins for the community.

12. We shall deal hero with three articles of food which are of primary importance from the point of view of increasing protein consumption namely (a) milk, *(b)* fish and (c) food yeast.

13 (a) *Milk*—Milk contains proteins of high biological value and, for this reason, its consumption by children and expectant and nursing mothers is to be particularly encouraged. Further, as has already been pointed out, milk is perhaps the one article of food which can be used by all classes of the population in the country in order to increase protein consumption. The need for the use of milk and milk products as widely as possible is, therefore, apparent. The *per capita* consumption of milk in India is, however, ranch smaller than that of any other country for which statistics are available. The following figures are quoted from a "Report on the Marketing of Milk in India and Burma" (1948) issued by the Agricultural Marketing Department of the Government of India, which gives a broad survey of milk production and distribution in the country.

Total consumption of milk and milk products for head per day.

	Ounces
Canada	56.8
New Zealand	55.6
Switzerland	49.2
Finland	45.4
Australia	44.4
The Netherlands	44.2
Norway	41.7
Great Britain	40.7
Denmark	40.3
U S. A.	35.6
Germany	35.0
Belgium	33.0
France	30.4
Czechoslovakia	26.3
Australia	18.8
Italy	10.1
India	5.8

14. For individual provinces the average rate of consumption varies considerably. Sind and the Punjab top the list with 18 ozs. And 15.2 ozs. per head per day, respectively, and Assam records the; lowest average of 1.3 ozs. Only. In the Province of Madras, in spite of low production, it is stated that large quantities of ghee are-exported to other parts of the country, with the result that the per capita consumption of milk and milk products is 3.3 ozs. Per day.

15. The present unsatisfactory state of milk production in India is emphasized by the fact that, while according to the 19-10 cattle-census India and Burma together possessed about a third of the world's recorded number of cattle or as many mulch cattle as Europe, including Russia, the actual production of milk in this country is only about a fifth of that of Europe. On the other hand, Canada, about 0 per cent of the cattle in India is able to produce as much as 25 per cent, of India's milk output.

16. The problem of increasing the consumption of milk is twofold. Its production must be raised considerably and its price brought down sufficiently low to be within the income levels of sections of the population. The associated problems cover a of coordinated effort in which private enterprise and various departments of Government, such as Agriculture, Veterinary, Forest, Public Health and Co-operative Departments, must take A consideration of these problems goes clearly beyond the scope of our report, but we may draw attention to two points in the Agricultural Marketing Department's report referred With better feeding and management of India's present population of ill-fed cattle it will be possible to increase output by at least 50 per cent. Secondly, goats of certain breed as much milk as marry types of cattle whiles the initial cost in are comparatively small.

17. We may now consider what would be a reasonable estimate of India's requirements of milk production. Dr. Aykroyd has sugon of 8 ozs. Of milk per day in the average Indian diet in order to improve its quality. This figure is definitely lower than the 1,000 games or about 33.8 ozs. Of milk recommended for expectant and nursing mothers and for children up to 14 years of age in the report of the technical Commission on Nutrition of the League of Nations (1986). That also recommends about the same high rate of consumption of milk by persons at older ages although it is suggested that some person of it may be replaced by cheese. In the countries for which figures of milk consumption were quoted in an earlier paragraph the amount of milk taken in liquid form alone various from 36.7 ounces, per head per day in Finland to 7.5 in Belgium. The only country, in which the figure is much lower, is Italy with its average rate of 2.8 ozs. In these circumstances, it does not seem to be an extravagant estimate if the figure of 8 ozs. of milk per day per head of the population in this country is suggested for consumption in liquid form alone. The present annual production of milk in India is stated to be about 7,447 lakh mounds. This amount will have to be raised by about 38 per cent, in order to meet the demand for liquid consumption alone.

18. The figure of 5.8 ozs. Per day, which was quoted earlier from the Agricultural Marketing Department's Report, as the average rate of consumption in India includes milk consumed in liquid form as-?

well as milk products expressed as equivalent amounts of milk. In India, only about 28 per cent of the total milk produced is consumed in liquid form, while 57 per cent. is utilized for conversion into ghee and the remaining 15 per cent. Into other products, such as khoa, curds, butter-milk and cheese. Taking, therefore, into consideration the existing demand for milk products the total increase in milk production will have to be at least 110 per cent.

19. While a consideration of the detailed measures for the enhanced production and equitable distribution of milk is clearly beyond the scope of this report, we wish to point out that our proposals for specific health services for mothers and children and for the school-going population will largely fail to produce the desired results, unless milk can be made available to these sections of the community as a supplementary article of food, irrespective of the individual's ability to pay for it. It has been brought to our notice that, very recently, the production of synthetic milk, which is claimed to have the same nutritive value as natural milk, has been developed on a laboratory scale in Great Britain. In view of the importance of the milk problem in India, we desire to bring this matter to the notice of the authorities concerned and to emphasize the need for immediate investigation into the claims put forward on behalf of synthetic milk and for promoting its production in India on a large scale, if these claims are justified.

20. (B) *Fish.*—The importance of fish as an article of diet for increasing the consumption of proteins cannot be over-emphasized. India's long coast-line, her numerous rivers, lakes and tanks afford great opportunities for developing the fish industry. The Royal Commission on Agriculture stated many years ago that "fish forms a especially valuable addition to a diet, the staple of which is rice." It went on to point out that improvement in the cultivator's diet holds out much promise of improvement in his general health and the addition of fish to his diet was emphasized as likely to be the most effective method of helping to provide a balanced diet over large areas of the country. Some idea of the inadequacy of the supplies of fish that are at present available may be gained from certain figures for Bengal which Dr. Sunderlal Horn, Fisheries Adviser to the Government of Bengal, gave in a paper read at the Food and Nutrition Conference held in Delhi in January 1944. For that province, where 90 per cent of the people eat fish, an estimate of 91/2 crore mounds of fish per annum is made as the probable total requirement, on the basis of 50 grammes of first class protein per head per day. As against this, the total production of fish in the whole of India, both fresh water and marine, is less than two crores of mounds, of which Bengal produces only half a crore. These figures should help to give some idea as to the extent to which the fish industry will have to 'be developed to meet the needs of the country.

21. (c) *Food Yeast.*—The Nutrition Committee’s report has drawn attention to the necessity for the development of the production of food yeast for supplementing protein consumption in India. Their remarks are quoted below:

"Mention must also be made of the manufacture of dried yeast and yeast extracts, by the growth of yeast in molasses solution.”Yeast is of value as a supplement to poor Indian diets, because of

its richness in protein and vitamins of the B group. It has considerable therapeutic uses in the treatment of malnutrition and deficiency diseases. Certain strains of yeast can be grown on molasses to produce palatable products of high nutritive value. In the process, protein and vitamins are synthesized from relatively valueless carbohydrate product—molasses—of which a surplus normally exists in India. The possibility of developing the production of food yeast at low cost should be fully explored."

22. It has been brought to our notice by Dr. G. Sankaran, Professor of Biochemistry and Nutrition, All-India Institute of Hygiene and Public Health, Calcutta, that the Board of Scientific and Industrial Research at Teddington, England, has worked out details of the culture and methods of production of food yeast and that large-scale production has been started in the British West Indies, where enormous quantities of molasses are available. We strongly recommend the immediate investigation of the possibility of producing food yeast on a large scale in India.

Urea

23. Another suggestion, made to us by Professor Sankaran, is the production of urea and its utilization as cattle food in order to promote the production of meat for human consumption. We give it below in his own words:—

"For long we have been obliged to obtain our animal proteins such as meat and milk through a process of feeding natural foods to other animals. This is a costly and uneconomical process. Very recently a discovery of first rate importance has been made which is as striking as synthetic fertilizers are in plant nutrition. It has been shown that urea, a simple chemical which can be produced in abundant quantities at a low cost, when fed to ruminants, is converted largely into proteins of the animal body. The story of this discovery is interesting. A few years before the present war, Du Pent de Nemours, the biggest chemical concern in America, developed a process of producing urea so very cheaply that its disposal became a difficult problem. Generous grants were made to scientists to find avenues for the extended use of this chemical. One of the American Universities, almost by an accident, discovered its value as a feed for ruminants. This has been extensively corroborated in America and Europe as well as in India. When it is realized that India has the largest cattle population in any single country in the World and that these animals are competing with man for food when a sufficient amount is not available for even human consumption, the value of large scale production of urea becomes apparent. Urea is made from ammonia and carbon dioxide these two become available in the process of manufacture of synthetic nitrogenous fertilizers. It is thus possible to link such production of cattle food with plant foods."

We strongly urge that this suggestion should be carefully investigated without delay.

Vitamins

24. Vitamins are found in the articles forming the normal constituents of our food. Therefore, if our diet is sufficiently varied in its composition, all the necessary vitamins are likely to be included.

But, as has already been pointed out, the average Indian diet is deficient in vegetables and fruits which supply some of these vitamins, while the use of highly polished milled rice or of bread made of white flour similarly deprives the individual of certain other important vitamins. Milk and eggs contain relatively large amounts of two other vitamins, and the fact that only a very small section of the population can afford their use in adequate amounts results in a deficiency of these vitamins in the diet of large sections of the people.

25. There have been remarkable developments recently in the production of synthetic vitamins. Many of them are now being produced on a large scale in laboratories and in factories. During the present War their incorporation in the staple foods has been carried out in England and the United States of America with great benefit to the health of the people. In the United States of America, it is known that, although their production in the laboratory started only a few years ago, synthetic vitamins are now being manufactured in such large quantities that they are available to the people at a relatively small cost. Dr. Sankaran has stated that, in 1942, an adult could purchase in that country his daily requirement of all the vitamins at about one Anna.

26. While some of the vitamins can be synthesized in the laboratory, an important one among them, vitamin A, is non-existent in the vegetable kingdom and has not so far been produced in the laboratory. It is found in appreciable amounts in the oils extracted from the livers of certain species of fish. During the War, when the shortage of cod-liver oil, which is rich in this vitamin, became acute, it was demonstrated that shark liver oil is rich in vitamins A & D and its production has been developed, on a small scale, during the past few years. This industry deserves protection and vigorous development. Hand in hand with such development the strictest control over the quality of the product sold to the public is essential, in order to obviate its gross adulteration which, we understand, is how going on

27. Another advance in connection with vitamins from these fish oils is that, by the process of molecular distillation under low pressure, the vitamins have been separated from other constituents of the fish oils, which give them their bad taste and smell, and have been obtained in highly concentrated form so that the administration of a very small amount is sufficient to meet the daily requirement of the individual.

28. For large sections of the population, vitamins derived from fish oils may prove to be unacceptable. For them there is an abundant source of vitamin A in carotene which is present in very large quantities in certain types of grass and leaves. For instance, it has been shown that water hyacinth is an abundant source of carotene and its production from this plant has already been demonstrated in the laboratory in this country. Carotene when taken is converted by the human body into vitamin A. The production of carotene in sufficient quantities will make it possible to incorporate it in vegetable oils and hydrogenated fats which are largely used by the people.

29. We recommend that the possibility of developing the production of the different vitamins, on the lines indicated above, should be investigated.

(2) **The Storage, Transport and Distribution of Food**

30. With an increased production of food, provision must simultaneously be made for its storage, transport and distribution. We have already referred to the lack of transport facilities for milk produced in rural areas. All perishable articles of food such as milk, fish and fruit require the development of refrigeration facilities for storage and transport. Without such development even the limited quantities now produced cannot be utilized to the fullest advantage.

31. There is also another aspect of the problem of storing food. Many years ago Colonel Sir Alexander Russell, who was then the Director of Public Health, Madras, calculated that rats alone were responsible for the destruction, each year, of food-grains to the extent of about Rs. 2-13-0 per head of the population. If this estimate is even approximately correct and if the destruction caused by other pests is also taken into account the extent of the loss of valuable food that the country suffers must be enormous. The need for conserving all the available supplies through proper means of storage and the control of insect and other pests is, therefore, apparent.

Processed Foods

32. Food-processing is as yet in an undeveloped state in this country, although there are obvious advantages to be gained both by the consumer and producer by the development of this industry. Perishable fruit for instance, can, by canning or by conversion into jam, be made available to a large section of the community, and waste as a result of inaccessibility to markets avoided.

33. During the war various methods such as the dehydration of vegetables, fish, meat, eggs and dairy products and the concentration of nutriments from fruit juices through expression, desiccation, solvent extraction and high vacuum molecular distillation were developed in the more important countries involved in the War, in order to utilize to the fullest extent the available supplies of food. In India, similar developments took place only on a small scale in connection with the organization of food supply to the Defense Forces. The desirability of processing perishable foodstuffs during local and seasonal gluts is such that the possibility of developing the industry should, in our view, be investigated as a part of the campaign for the improvement of nutrition in the post-war period. Such developments will be of the greatest value in connection with milk and milk products, fruits and vegetables.

34. It may not be out of place here to refer briefly to the Food Inspectorate which, it is understood, has been developed during the- War for the purpose of ensuring that food for the troops in India is wholesome and is of the necessary nutritive quality. One of the activities of this organization is the control of processed food produced in India. The duties include pest control in storage depots, mills and contractors' go-downs, the hygiene of producing factories, the technical control of manufacture in certain limited spheres, the investigation into the bacteriology of indigenously manufactured food -stuffs and the formulation of processing instructions for certain manufactured articles.

35. We hope that food processing will develop in this country in the post-war period as a part of the programme for improving ^the- nutrition of the civil population. The possibility of securing as far as possible, the laboratories and the technical staff of this food inspectorate to serve the needs of the civil population should be investigated before they are dispersed. In addition to work in connection with food processing some of the laboratories could, if suitably situated, serve the needs of individual Provincial Governments in the development of their services for the control of food adulteration.

Prevention of Food Adulteration

36. This subject was considered in great detail by a committee' appointed by the Central Advisory Board of Health, and recommendations covering a wide field have been put forward for suitable action by Provincial Governments in the country. We fully endorse these recommendations, the more important of which are mentioned below:

(1) In order to assist Provincial Governments to develop and) improve their existing organisation for the detection of food adulteration, it was suggested that the Government of India should appoint a standing Central Committee for Food Standards. Its function would include (i) the reparation of Instructions for Public Analysts to be periodically modified and supplemented in the light of new knowledge and (ii) the laying down of analytical technique for the purpose of ensuring uniformity in food analysis throughout the country.

We understand that this committee has already been appointed' by the Government of India on a temporary basis. We think that a technical committee of this nature should function permanently if the purposes for which it is established are to be achieved. We, therefore, recommend its continuance as **a** permanent organisation.

(2) The creation of a provincial cadre of analysts and the establishment of food laboratories in association with central and regional[1] bacteriological laboratories in individual provinces were recommended.

It will be remembered that in the chapter dealing with our recommendations for the improvement of medical research in this-country, we have described a scheme for the establishment of a regional laboratory service in the province of Madras and have-suggested the development of similar services in other provinces also. Control of the purity of food will require not only chemical but bacteriological methods of examination and we, therefore, consider the establishment of food laboratories, in close association with the proposed central and regional bacteriological laboratories in the-provinces, a distinct advantage.

(3) In view of the existing law level of health administration in local areas, the Food Adulteration Committee suggested that the- provincial Director of Public Health and local Health Officers should be given certain powers which have been vested in them in Madras by the Public Health Act of 1939. We have also included, among our recommendations, for the improvement of local health administration, the conferment of these powers on health authorities in all the provinces.

(4) The Food Adulteration Committee drew attention, to the desirability of deterrent punishment in respect of offences under the ^Provincial Food Adulteration. Acts and desired that in the case of repeated offences, provision should be made for the award of imprisonment.

(5) It was pointed out that instead of legislating only for the control of food adulteration, it would be desirable to enact on a wider basis so as to bring together air the existing food legislation at present scattered in various Acts. It was also suggested that the existing legislation should be modernised and the law relating to food standardised under an Act of the Central Legislature.

(6) Simultaneously with the provision of adequate legal powers, it was recommended that administrative action in respect of certain essential foodstuffs 'should be developed through the promotion of .co-operative effort for increasing production and for reducing the cost of distribution to the public.

Improvement of the Quality of Food

37. The Agricultural Produce Grading and Marking Act, 1937 which is a Central Act, is intended to secure an improvement in the quality of agricultural produce. It lays down a system whereby different articles are graded and marked according to certain prescribed standards of quality. The prescribed designation mark is known as the "Agmark" and has three grades of quality indicated the different colours. The grade designations are 'Special' (white), 'A' (red) and 'B' (blue). The articles to which such grading and marking apply include fruit, vegetables, eggs, dairy produce, tobacco, coffee, hides and skins, fruit products, atta, oil-seeds, vegetable oils
((including hydrogenated oils and vegetable fats), cotton, rice, lac and wheat.

38. The Agricultural Marketing Adviser to the Government of (India is entrusted with the working of this Act. Any person or body of persons desirous of being authorised to mark any article with a grade designation mark must apply to this officer who, after due enquiry and after satisfying himself that the necessary conditions &re fulfilled, shall grant a certificate of authorisation enabling the person concerned to apply the grade designation mark authorised in the certificate to the articles and at the premises mentioned in that certificate. The Agricultural Marketing Adviser or any person, authorised by him or by the Central Government, has the right of
entry to, and inspection of, the premises at all reasonable hours as well as of taking samples for examination. There is also provision for the cancellation, modification, suspension or revocation of the certificate of authorisation after the party concerned had been given 14 days notice and an opportunity to show cause why the certificate should not be cancelled, revoked, modified or suspended.

39. We are of opinion that the principles of the Agricultural Produce Grading and Marking Act should also be applied to food products other than agricultural, with the object of improving their quality, and would suggest that early consideration should be given to this recommendation.

CHAPTER VI

HEALTH EDUCATION

Introduction

1. Closely linked up with the problem of physical education is that a of health education. Personal and environmental hygiene constitute two important aspects of the public health problem, and in order to secure a progressive improvement in respect of both, it is essential that the people, children and adults, should be so educated as- to adopt and practice the hygienic mode of life and to refrain from doing what may prove harmful to their own health and to the health of others. According to modem conceptions, health education includes not only instruction in purely health matters, but also those activities which are likely to influence favorably an individual's health knowledge, health attitude and health habits. Health education must promote health and health consciousness, and these are best achieved when health practices become part of an individual's daily life.

The Importance attached to Health Education some progressive countries

2. A great deal of attention is paid to the subject of health education in the West, In England, there is a central Committee for Health Education which works in collaboration with the Ministry of Health. In Australia, there is a regular and carefully drawn up course of instruction in health and hygiene prepared in association with the Health Department for all pupil teachers in the training, colleges. In America, there is a new development whereby an at- tempt is made to train a type of individual called "Health Educator" a person whose background is that of a teacher and to whom additional training in public health is given. Great importance is attached in Russia to health education and a large amount of money is spent annually on research and on the preparation and' execution of schemes calculated to improve .and preserve the health of the community.

Health Education in India

3. In India too, health education is gradually taking its proper place in the life of the people, but progress in this direction has so far been slow. In reviewing the activities in this field, we may refer separately to the health education programmes for school children and for the- general public. The teaching of hygiene is compulsory in all ordinary schools and it is also a subject of study in the curriculum of all normal schools and teachers' training institutions but the standards of teaching vary from province to province. Speaking generally, the teaching is more theoretical than practical. This is perhaps due to a variety of causes. In many schools, particularly in the rural areas, the buildings and the compounds are kept in & condition which is far from being satisfactory from the hygienic point of view, while the provision of sanitary conveniences and of washing facilities is often of a primitive type or altogether absent. In the circumstances, the pupils are not in a position to practice what they are taught in the class room. Further, the teacher is in many cases, hardly an example to the students in the matter of

personal hygiene. In the case of children and even of adults, example is much more important than precept in influencing the life and conduct of those who, are to be taught. We would not place the blame' wholly on the teacher. In many parts of the country the' primary school teacher is so inadequately paid that, with his responsibilities for the maintenance of a wife and children, his standard of living necessarily becomes low as well as the level of personal hygiene which he is able to keep up. School children, when trained in such unsatisfactory surroundings a nil under the influence of teachers, whose example may exert no beneficial influence on them, must naturally fail to profit by the theoretical teaching of hygiene imparted to them. A Joint Committee of the Central Advisory Boards of Health and Education, which - investigated the health problems of school children in 1941, made the following remarks re-grading health education in schools.

"While the general situation on paper sounds satisfactory, the low standards of personal and environmental hygiene met with in many schools are such as to. forbid an easy acceptance that all is well. These low standards, lead to the conclusion that something is wrong with the content of the syllabuses and the methods of teaching hygiene both in training institutions for teachers and in schools for children." The position thus summed up by the Joint Committee in .1941 has not materially altered in the subsequent years.

4. As regards the general population, health education is mainly carried out by the provincial public health departments. To most provinces a special health propaganda organisation exists in the office of the Director of Public Health. The activities of this organisation include the holding of periodical exhibitions at different places, more particularly at fairs and festivals, and the preparation of leaflets and pamphlets and of suitable material for health talks with magic-lantern demonstrations. In some provinces, motor vans stocked with suitable propaganda material, including facilities for the exhibition of films and of lantern slides, are also maintained and the message of health is earned far into the rural areas.

5. In certain provinces, a good deal of hygiene publicity work is also being done in the rural areas by some other departments of government. For instance, in the Punjab, the Rural Reconstruction Department and the Cooperative Department have been actively co-operating in the health education of the people. The Rural Reconstruction Department maintains cinema lorries which give suitable and specially prepared shows in the villages emphasising the health part of the village uplift programme. Models made of wood or clay are prepared showing a good village, a bad village, a sanitary and an insanitary home a sanitary well, various types of latrines, etc. At every fair of note in the province useful and instructive cinema shows are invariably arranged. Quite a number of uplift songs have been recorded and are distributed free as well as sold at reduced prices. This- Department has also devoted its publicity efforts to the popularisation of manure pits in the Punjab villages and attempts have been made everywhere to persuade villagers to have ventilators and chimneys in their houses. Grants are also made for construction of sanitary wells. A special campaign against malaria has been organised and thousands of mosquito-breeding pits and pools

have been filled up or sprayed with oil Women welfare workers have been appointed, one in each of the 113 tehsils of the province. The Punjab Co-operative Department has ably seconded the efforts of the Rural Reconstruction Department, and quite a number of Better Living Societies" and "Co-operative Medical Aid and Public Health Societies'' have been established. We are aware that health education on somewhat similar lines has been carried out in other parts of the country as well as the organisation of co-operative effort to solve local health problems. For instance, anti-malaria co-operative societies have been in existence in Bengal for many years. We have drawn attention to what has been done in the Punjab only to suggest that similar activities should be - developed wherever health education work has not so far received adequate attention from the authorities concerned.

While summing up what has been achieved in this field in the provinces, we must,- at the same time, express the view that, possibly, in no province, has health education come up to the standard reached in the more advanced countries.

OUR RECOMMENDATIONS

Health Education in **Schools**

6. We are in general agreement with the recommendation of the special committee of the Central Advisory Boards of Health and Education that the instruction of school children in hygiene should begin at the earliest possible stage and should not be left, as it is at present largely left, to the secondary and high school period. In the early stages, such instruction should be entirely practical and devoted to the, formation of health habits and promotion of personal hygiene. In order to emphasise the practical aspect of health education, every effort should be made to improve the existing conditions in regard to the school and hostel buildings, class-rooms, compounds, latrines etc., so that the student may see, in actual operation, the sort of hygienic and sanitary arrangements he is taught and encouraged to demand for himself.

It is particularly important that the primary school teacher should be a practical enthusiast as regards personal and environmental hygiene, for on his teaching and example will largely depend the formation of all those habits and the development of those ideas and aptitudes which are essential for healthful living. We have already indicated that economic reasons may largely be responsible for the present primary school teacher not being able to set an example $o his pupils in the matter of personal hygiene. We believe that a marked improvement in the present situation will arise only when a better class of teachers, with a higher standard of training and better emoluments, becomes available as the result of the post-war educational programme.

The active co-operation of school clubs.and societies should be helpful in the development of health education. The Boy Scout and Girl Guide movements, the Red Cross and St. John Ambulance Associations are contributing a substantial share to the spread of health knowledge in tbe wider sense of the term. In addition to the activities carried on by these, we recommend the formation of "Health Clubs" and the celebration of "Health Weeks", "Safety

First Weeks" and "Clean-up Weeks" in order to assist in the development of health consciousness among .the school population.

Health Education of the general population

7. While voluntary organisations, such as the Indian Red Cross Society, the British Empire Leprosy Relief Association (Indian Council) and various health associations in different parts of the country, have been participating in the health education of the people, the main responsibility for assisting and guiding such activities should rest, in our opinion, on the health departments of Governments. We, therefore, recommend the establishment of a properly constituted Health Publicity Bureau as part of the Central or Provincial Health Department. While, in the majority of the provinces, such an organisation exists, there is at present no corresponding organisation in the Central Health Department. The establishment of such a bureau at the Centre appears to us to have been long overdue. Its functions should include participation in the active promotion of health education among all sections of the population and the giving of suitable advice and help to Provincial Health Departments in the organisation of health propaganda in their own territories. One important duty of this Bureau should be the publication of an Indian Health Journal. There is a good Meal of suitable material and literature, local and foreign, available in the Central Health Department, which in the absence of such a Bureau, cannot be utilised as profitably as it could be.

8. We also desire to see the existing organisations in the provinces strengthened with properly trained staff and equipment for undertaking health education on an extensive scale and for preparing suitable propaganda material. The organisation of health propaganda is a highly specialised task and it should be entrusted to persons capable of producing results. The relatively small achievements so far recorded in this field are probably due to the fact that this important branch of health activity has generally been entrusted, in the past, to people with little or no practical training in the subject.

9. While such intensive efforts will no doubt help to a large extent, to educate the people in health matters, the part which sound health administration can play in achieving the same purpose should not be forgotten. The doctor, the nurse, the midwife and, in fact, every health worker will, in the faithful discharged his or her duties, be educating the persons with whom they deal, in regard to the prevention of disease and the promotion of positive health. The instruction so given to individual persons will we have no doubt, prove to be more effective than health talks and cinema or magic lantern demonstrations to large audiences, because the personal relationship which the health worker establishes with such persons <will help to make them more responsive to his advice.

10. The methods of propaganda which commercial organizations such as the Indian Tea Association, have employed with great success should be studied and adopted as far as practicable in the development of the health education campaign.

We also recommend the establishment of permanent Health Museums in the larger towns and cities.

CHAPTER VII

PHYSICAL EDUCATION

Introduction

1. In this chapter we shall deal with physical education as a means of attaining and preserving health.

Not long ago, physical education used to be synonymous with some sort of old-fashioned, mechanical drill forced on unwilling, students by a stern-looking, rough and tyrannical instructor who lavished abuse and made a free use of his fists and cane on his unfortunate victim. A so-called "drill period" was included in the .timetable of every school, but no pupil looked forward to it. In addition to drill, there used to be in some schools, parallel and horizontal bars on which boys were forced to perform some gymnastic exercises, irrespective of their state of health or capacity to undergo strenuous-exercise. No one looked upon physical education as an integral and important part of general education, and for many years it was almost completely neglected. Even in the United Kingdom, it was not before 1905 that public attention was focused on the subject as a result of the publication of the report of a Royal Commission on Physical Training in Scotland. The Education Act of 1907, the great work in this field of Sir George Newman, who was then the Chief Medical Officer of the Board of Education and the Education Act of 1921 placed health and physical education and training in the fore-front of, educational schemes and programmes. During the last two decades, revolutionary changes and developments have taken place in all the civilized countries of the world, in the concept and content of physical education and training. There has been considerable research, old theories have been exploded and the modern system of physical culture has developed into a science. It is now universally recognized that proper physical education plays a very important part in the intellectual and moral development of a people and that any time, effort and money spent on it are fully justified.

Modern trends in Physical Education

2. It will be helpful if a brief description is given here of the modern trends in physical education and training in certain western, countries.

England.—In the elementary schools in England, there is physical' education of a kind, but not necessarily earned out by trained instructors. In the public schools, great stress is laid on games, sports and physical training in general As everyone knows, love of sport in England permeates the country as a whole, and nevertheless, it would not be correct to say that a national policy in regard to physical education has been developed there yet. We understand, however, that the Ministry of Education in England is working out a very comprehensive scheme of physical development for all.

Australia and Canada.—"The National Fitness Act" was passed in Australia some years ago. Under this Act, a National Fitness Council has been formed. For a population of 7 millions, the Commonwealth Government grants a subsidy of £72,000 per annum. This would, represent, on a population basis, an annual provision of

about Rs. 4 crores in India. We understand that, but for the War the Australian subsidy would have been much larger.

The trend in Canada is well illustrated by the fact that a number of towns in one province decided that, as a War memorial, they would build up recreation centers instead of raising statues.

The United States of America.—There is an increasing tendency in the United States to substitute athletic games for the classic European gymnastics. The physical training syllabuses for children are regarded as an essential part of their general education. Sport has made headway in all classes of the population in the United States. It is intensively organized, especially by the National Recreation Association. In the schools a gymnasium is a standard-equipment, although many rural schools have not got it yet. The employment of physical education teachers is quite extensive in the cities, but it is not so common in the rural areas. Parks and playgrounds have been and are being developed in the cities. As in England, the boy Scout and Girl Guide movements are highly developed.

The Bulletin on the Health Organization (Vol. VI, No. 4, August 1937), League of Nations gives the following information regarding; physical education and training in some other countries: —

Germany.—Great efforts were made in Germany in the field of physical training since the First World War. The new title of “sport specialists" had been introduced. It could only be claimed after’ fulfilling various conditions, the taking of a special course in the technique of the physical examination of athletes, participation in various athletic exercises, etc. Field sports became, in fact, a national feature and there were over 3,000 youth hostels in which more than five millions slept and where every kind of facility was made available in the matter of prizes, travel and equipment. Youth was organized on the principle of self-government, that is, management was entrusted to the young people themselves and the entire group leaders were drawn from the ranks. The Hitler Youth Organization included six million boys and girls of various age groups. Beginning in the school, Physical education continued in the Labor Service Corps—compulsory for all youths between 18 and 20. Adult physical education was-in the hands of the State Association for Physical Exercise. Sports were compulsory in all higher educational establishments.

The Labor Front included over three million members and catered for every type of sport. The training of leaders was very actively pursued and an academy of physical training was set up in Berlin.

Scandinavia.—To the Scandinavian countries belongs the honor of originating the so-called Swedish system—a great success in its day which still survives in a modified form. Its founders believed that development of the body was a sufficient goal in itself. This system has been greatly modified since it was first introduced.

Denmark.—A fact, which deserves attention, is the extent to: which the system of physical education prevalent in Denmark has spread, in rural schools where the physical training instructors are peasants who carry out their work without pay, and who are able to improve their own knowledge by means of special training courses lasting four weeks. The marked growth of popular physical culture

in Denmark is due to a careful university training of gymnastic teachers, who are also concerned with the teaching of other subjects and whose training includes a study of theoretical and practical physiology.

Italy.—before the war physical training of young people in Italy reflected the modern tendency to apply methods of physical culture to all individuals, starting from the principle that the best means of raising the physical standards of adults is to improve the physique of the young. The Italian methods of physical training were based on the official policy of the "nation in arms". This educational movement reacted very favorably on sports organisations, and their number increased considerably. University sports also made considerable headway. Again, sports training was very popular in all industrial circles where the question of workers' spare time was in the forefront.

Czechoslovakia.—A national physical training system, which is worth studying, is that of the Sokals in Czechoslovakia based on patriotism. In pre-war Czechoslovakia, the importance of physical training had long been recognized. The educational value of physical culture was emphasized, and its beneficial effect on the personality of the child extolled. A completely modernized system of physical training was available to all classes. In 1934, there were 105 gymnastic and athletic societies with a membership of 2,085,322 (over 15 per cent of the whole population). The Ministry of Public Health and Physical Education played an important part in directing, coordinating and subsidizing these activities. Czechoslovakia had modernized the syllabus for school gymnastic and physical education for girls and boys of all ages. Sport was also held in honor in Czechoslovakia. Tennis was a national game.

Russia.— Russia, like the United States, is not bound too rigidly by classic methods. Physical education accounts for a considerable part of the general-educational programme. The natural methods of the active school are followed. The pupils are required to display the maximum initiative and activity, as their exercises are not artificial but practical and, therefore, natural. All physical training is under medical supervision. There is an organized programme and there is a large number of schools for training physical-education teachers. The course covers a period of four years and there is a large budget provision for physical culture. A Council of Physical Culture was organized in 1924 and the Chairman has cabinet rank.

Physical Education in India

3. Something has been done in India also to give physical education and training their proper place in the educational structure, but a great deal remains to be accomplished, and it is only fit and proper that the subject should be prominently borne in mind when considering schemes for the amelioration of the physical, social and intellectual condition of the people of the country. Hitherto, the tendency has been to place too great an emphasis on the purely academic side of education. Education, to be complete, must be based on a comprehensive plan which does not ignore or neglect any factor -calculated to influence the development of the child.

Given suitable plans and facilities, the success of any scheme of physical education primarily depends on the teacher, and it is regrettable that in India there is a great dearth of suitable teachers

qualified to impart instruction in this important subject. Children' learn more by example then by precept, and the teacher in charge of physical education should, therefore, possess qualities which cannot fail to impress the child with whom he is brought into contact. We consider that, in addition to knowledge of the principles and practice of physical education, the teacher should possess sound health and good character combined with understanding and sympathy. Where thousands of such teachers are required not even hundreds are available. To produce such teachers in adequate numbers we require several suitably equipped and staffed physical education schools and colleges in the country. We understand that, at present, there are only five physical education colleges in India. These are (i) The Y.M.C.A. College, Madras, (ii) The Training Institute in Kandivali, Bombay, (in) The Physical Training Centre, Calcutta, (iv) The Physical Education College, Hyderabad (Deccan) and (v) The Lucknow Physical Education College. We were told that there used to be a very good Physical Training Education College at Lahore, but that it has not been functioning during the last three or four years because the premises and grounds were placed at the disposal of the military authorities.

OUR PROPOSALS

4. Our proposals fall under two heads, namely, those which relate to:

(1) The training of physical education instructors and

(2) The organization of a physical training programme which will include, within its scope, all sections of the community.

The Training of Physical Education Instructors

According to a rough estimate, the total number of physical training teachers trained at the institutions referred to above, during the last 20 years, does not exceed 3000. This number is far too small for the needs of the country, and if the proposed post-war schemes of education are to be implemented in every province and Indian State, thousands of qualified physical training teachers will be required. The first step to be taken in this direction is, therefore, the starting of some more physical education colleges, and we recommend that there should be one or two such institutions in each province according to its needs. Each institution should grant a recognized qualification. Apart from the requirements of the secondary schools and colleges, thousands of teachers will be needed for our primary schools, and we suggest that in the normal schools— where vernacular teachers are trained—physical education should be, if it is not already, a compulsory subject. We understand that the post-war scheme of education envisages the starting of a large number of such normal schools in every province. Further, in every training college for teachers of secondary schools—and their number is also bound to be increased in the near future adequate emphasis should be placed on physical education. Thus a regular stream of teachers qualified to participate in the physical education programme, will, during the next two or three decades, continue to flow from these training institutions, and we believe that they will all be needed to promote an intensive scheme of physical education in the growing numbers of schools and colleges, which the post-war education scheme will bring into being.

While, under the above proposals, all teachers in primary and secondary schools will be equipped to participate in the programme of physical education, the leaders in this field will obviously be those who undergo the full and intensive course of training provided in the physical education colleges. It is desirable that at least all the secondary schools and colleges should have, in due course, one or two such physical educationists on their staff, while all the administrative posts in the provincial organization, we are suggesting below, will also be filled by such persons. Our suggestion that all teachers of primary and secondary schools should be trained to take part in the development of the physical training scheme has been actuated mainly by two reasons. One is that the nation-wide programme of physical culture, which we are advocating, cannot be undertaken without an army of instructors and, as will be shown later, teachers are, in our view, well-fitted to fill this role. The other is that the usefulness of physical instructors will be on the wane after a certain age and, therefore, it seems to us an advantage if such men also possess the additional qualifications of an ordinary teacher on the academic side, so that they can, during the last 10 or 15 years of their service, be diverted to the purely teaching line.

In addition to the development of such training facilities in India, we suggest that a certain number of highly qualified physical training instructors should be selected and sent abroad at State expense for higher training on the most up-to-date lines. On their return to India, they should be employed in responsible administrative and teaching posts where their special training will be of value.

A Physical Training Programme for the Community

The programme should make provision (1) for the students of schools and colleges and (2) for the general public. It seems to us that, at least in the beginning, it may be advantageous to develop a single organization to serve the needs of both these sections of the population. The anticipated expansion of post-war educational activity will probably bring schools to almost every village or group of small villages in the country and, if our suggestion for the training of all teachers as exponents of physical culture is adopted it should be possible to provide a sufficient number of trained workers even in the rural areas, to develop physical culture activities not only in schools but also outside them for the benefit of the general community. The campaign for improved community health through physical culture will require enthusiastic workers who through their own zeal can help to rouse a similar response from the people. In our view the schoolmaster, because of his general education and of the influence he is able to exert on successive groups of pupils with whom he comes in contact and on their parents, is favorably placed for stimulating such response from the public.

Provincial Organization

5. For promoting the development of a physical training programme on a broad basis, it will be necessary to establish a suitable organization in each province and, for the reasons already suggested, this organization may, with advantage, be made part of the provincial Education Department. In this connection, it may the mentioned that, in the Punjab, there are suitably qualified officers

designated as "Assistant District Inspectors for Physical Training" who are attached to the district inspecting staff of the Education Department. It is a part of their duty to encourage the establishment and maintenance of village games and sports clubs for adults, and we gather that much useful work has been done in this direction by these men. In our opinion, not only should there be one such officer for each district, but one for each Tehsil. At the provincial headquarters, there should be a highly qualified physical educationist with the rank of an Assistant Director of Public Instruction, who should act as the adviser to the Director of Public Instruction. In the larger provinces, a suitable number of regional officers for groups of four or five districts may also be found necessary.

Emphasis on National Games and Exercises

6. Another matter we desire to emphasize in connection with the national physical education programme is the need for incorporating in it, as far as possible, various forms of physical training, games, sports and folk dances which are prevalent locally in different parts of the country. These embody in themselves the genius innate in the people for organized recreational activity, and it is in the national interest that such of them as possess real cultural value should be preserved and not permitted to die out. Apart from this, these activities are generally less costly, from the point of view of development and maintenance, than games such as cricket, hockey and tennis and, in the large scale scheme of physical training we are advocating, the question of cost cannot be ignored. We do not suggest that the newer forms of recreational activity that western education has brought into the country should be brushed aside. What we desire to see is a blending of the old and the new in an attempt to evolve a sound scheme of physical culture, which provides for the training of the physique through gymnastic and other exercises as well as for the development of that alertness of body and mind, of discipline and of team spirit, which results from corporate recreational activities conceived on as wide a basis as possible. It is such a system of physical culture which we desire to see developed for the student population and for the general public. This will be possible only if the programme of training in physical education for teachers in training schools and colleges is drawn up in accordance with the suggestions put forward here.

Physical Education Programme for the Student Population

7 In addition to the different forms of physical exercise and recreational activity, which will be developed in the schools and colleges, we desire to see as wide an expansion as possible of the Boy Scout, Girl Guide, the Junior Red Cross, the Hindustan Scout, the Bengal Bhattacharya and similar movements, which can make valuable contributions to the well-being and disciplined training of the youth of the country. It is desirable that, when fully trained physical educationists become available in sufficient numbers, the programme in each school and college should be developed under an instructor with such training.

Certain persons are not able to stand physical's train to the same extent as others and it is, therefore, necessary that, in schools and colleges, physical instructors and school medical officers should cooperate in order to ensure that, in individual cases, the physical - training given is regulated in accordance with the medical advice of

the doctor. We shall deal with this subject in the chapter containing our recommendations for health services for the school-going population.

Physical Education of the Adult Population

8. We recommend that, in cities and important towns, local authorities should direct more attention than has so far been given to the organization of suitable forms of recreation for the non-student population. Playgrounds, parks, wrestling arenas and swimming pools-should be provided, and the need for including such requirements should be kept prominently in view in any schemes of town planning that may be undertaken. All existing voluntary organisations promoting amateur sports should be encouraged and, wherever possible given grants-in-aid. While local authorities should be made the instruments for carrying out this scheme of physical education for the general community, the Governments should help them financially and with technical advice. The provincial organization, which we have recommended, will be responsible for giving such advice and for recommending the distribution of grants-in-aid for the development of physical education schemes.

Physical Education for Women

9. Any scheme of physical education will not be complete unless suitable provision is made in it for girls and women and we attach the greatest importance to a proper system of physical training being evolved for them. In training a boy you train an individual in training a girl you train a family. Girls would, of course, need a somewhat different type of physical education to that designed for boys. This aspect of the question, as also the very difficult problem of financing and training an adequate number of women teachers, will, we earnestly hope, receive the careful and sympathetic consideration of the authorities concerned.

CHAPTER VIII

HEALTH SERVICES FOR MOTHERS AND CHILDREN

1. We consider in this chapter and in the succeeding two chapters special services for three separate groups of the community, (1) mothers and children, (2) school children and (3) industrial workers. The reasons for developing such special services will be set forth in detail in the appropriate places. We must emphasize, in our view, that such services should not be considered as functioning independently of the general health organization for the community. The ultimate aim of a national health service is to ensure continuity of health protection to every individual from the prenatal stage, through childbirth and the subsequent years of life right up to death. The special services mentioned above are intended, through certain specific duties which they perform in respect of particular sections of the community, to supplement the provision for health protection which the general health organization makes available to all. It is essential, however, to recognize the organic unity of such special services and of the general health organization. We have kept this in view in formulating our proposals for the development of personal services for each of these three groups of population.

MOTHERS AND CHILDREN

Introduction

2. Our review of the existing health conditions in respect of these sections of the population contains abundant evidence to show the importance and urgency of providing adequate measures for the protection of their health. It was pointed out that, on a conservative estimate, about 200,000 women died annually from causes arising out of childbirth in a year in British India, and that the number of those who suffered from varying degrees of disability resulting from the same causes must be many times that figure. No estimate of the extent of maternal morbidity in India can be made except, perhaps, in an imperfect way by basing our calculation on the experience of some other country. In a recent Report on National Maternity Service (May 1944) issued by a Committee appointed by the Royal College of Obstetricians and Gynecologists in England, it is stated that "Blair-Bell estimated that for every woman who dies as a result of pregnancy or childbirth, 20 suffer from impaired health and lowered efficiency. If this proportion can be applied to India, the number of women, who are made to suffer ill-health as the result of pregnancy and child bearing, will each year be about four millions. Apart from the suffering and loss that these figures for maternal morbidity and mortality reveal, the adverse effect produced on home life by the continued illness of the mother or by her death at a comparatively early age can hardly be estimated, particularly from the point of view of the health and well being of the surviving children.

3. As regards child mortality, it has been shown in our survey that nearly half the total annual deaths at all ages in British India take place among children under ten years and that, of these, about half the number is among those under one year of age. It is, therefore, clear that measures directed towards reducing sickness and mortality among mothers and children must have the highest priority in any programme of health development in this country.

4. Before making detailed proposals for providing health protection to mothers and children, we may enunciate certain general principles which should govern the development of the requisite services.

Child bearing should normally be a physiological function for the woman and, although certain demands would be made on her for meeting the prenatal needs of the child, she should, under reasonable conditions of life, be able to adjust herself easily to these requirements. On the other hand, when she is sick or in a subnormal state of health, which may often be associated with socio-economic causes promoting adverse conditions of life such as malnutrition and/or under nutrition, overcrowding and undue physical strain through overwork, child bearing becomes invested with a measure of risk much greater than that which a healthier person placed under more favorable conditions has to face.

5. It follows, therefore, that the special steps taken to promote healthy motherhood must include not only medical measures but also certain ancillary services designed to mitigate or remove the socio economic factors mentioned above. It also follows that our ultimate aim should be not merely to safeguard maternity but also to provide adequate health protection to all women, in order to ensure that the function of motherhood is undertaken under optimum conditions of health. Special services for the protection of maternity will no doubt be required, but these services should be developed as parts of the wider organization for providing adequate health protection to all women.

The health of the mother and the health of the child, particularly at the younger ages, are so closely related as to be almost inseparable. At the prenatal stage and during confinement the health of the child and even its existence are largely influenced by the health of the mother. During the first few weeks and months following childbirth, the infant is generally in such close association with her and so dependent on her for sustenance that any ill health affecting the latter has its natural repercussion on the child. Later too, it is the mother's watchful care that wards off the adverse effects of an alien environment to which the growing child has to adjust itself and, if sickness or ignorance of mother craft prevents her from exercising the requisite care over her baby, the latter must, in the majority of cases, suffer the consequence of such neglect.

In these circumstances, it seems essential that the proposed health organization should deal with mothers and children together.

6. For the sake of continuity of service it is desirable that, as far as possible, the same doctor, midwife and public health nurse should be responsible for the care of the mother and child. Thus the supervision exercised over the mother during the antenatal period, during confinement and in the postnatal period will be uniform. From the point of view of the infant, it is of advantage if such continuity of service can be maintained during infancy and the subsequent years of childhood.

OUR RECOMMENDATIONS

Certain Preliminary Considerations

7. The proposals that are embodied in the short and long-term programmes of health development, that we have recommended in an

earlier part of this report, incorporate the principles indicated above. The maternity and child welfare organization will be an integral part of the general health service and is intended to provide domiciliary and institutional health protection for expectant and nursing mothers as well as for infants and children. In each local area the same medical officer, public health nurse and midwife will deal with women during the antenatal stage, confinement and the postnatal period. Similarly, the same staff will ensure continuity of service to the growing infant throughout the period of childhood. While the pattern of the health service for mothers and children will be same in both the short and long term programmes, inadequacy of trained staff and of funds will, during the short term, limit the range and quality of the service that can be made available.

Short-Term Programme

Primary Unit

8. The staff available for this branch of health activity in a primary unit will consist of a woman doctor, four public health nurses, four mid wives and four trained *dais.* The institutional service will consist of a dispensary at the headquarters of the unit and a hospital of 30 beds serving four such units together. At the dispensary there will be provision for four beds, of which two will be for maternity cases. In the 30-bed hospital six will be set apart for maternity and gynecological cases and there will be 4 cots for children. It is understood that certain Provincial Governments are proposing the establishment of maternity homes any provision in these homes above the minimum we have recommended will be - welcome.

9. The population of a primary unit will be approximately 40,000. The average area covered by it will vary considerably, from about 51 square miles in Bengal to 425 in Sind. Only in four provinces, how-ever, will it exceed 200 square miles. If the last figure is, therefore, -taken as the average area of a primary unit in British India, as a whole, we shall be making a reasonably correct estimate. It will be recalled that, in our short term scheme, we have suggested that each primary unit should be divided into four circles, of which one would be associated with the headquarters of the unit, and that in each of these four circles, there should be stationed a public health nurse, a midwife and a trained *dai.* The radius, within which each of them will then have to operate, will be about 4 to 5 miles.

10. On the assumption that the birth rate is about 40 per mile each circle with its population of 10.-000 may be expected to have 400 births per year. Each midwife and the *dai* will, therefore, have to deal with 200 births in a year, which is twice as much as can be effectively dealt with under normal conditions. Until the service becomes sufficiently popular, it is unlikely that all the expectant mothers in the area will avail themselves of the facilities that are offered. We may, therefore, expect that in the early stages, our service will be availed of by only a proportion of the number of pregnant women in the area, so that the demands on each midwife and *dai* are not likely to prove excessive.

11. At the headquarters of each primary unit and in the places in which 30-bed hospitals are located, the services of a medical officer will be available and there will also be provision for a small number

of maternity beds. With such facilities, and with the aid of the public health nurse, midwife and trained *dai* stationed at these places, it should be possible to organize a maternity and child welfare centre, the range of activity of which can be expanded as and when-more trained personnel and funds become available and communications improve. A weekly clinic should be held by the doctor at this-centre. The functions of such a centre should include the following.—

(1) To get in touch with as many pregnant women in the area as possible and to persuade them to visit the clinic regularly. On the first visit, a detailed examination of the expectant mother, general' and obstetric, should be made and a record of her medical history kept. At subsequent visits advice in respect of the hygiene of pregnancy and instruction regarding diet will be given. Further, it should be possible to make an early diagnosis of any deviation from normal health, to give appropriate advice and timely treatment for such diseases as tuberculosis, syphilis, anemia and toxemias of pregnancy or to refer the patient to institutions or specialists for medical attention.

(2) To provide for the skilled assistance of a midwife or trained *dai* at the time of delivery and for domiciliary visits by a public health nurse for two weeks thereafter. A record of the confinement and of the immediate postnatal history should be added to the card of the mother and a new one opened for the infant.

(3) To keep the mother and child under observation, if possible, for a year. It is desirable to keep a weekly weight record of the infant. Advice to the mother should be given in respect of lactation, diet and exercise and, at a later stage, in respect of weaning. Treatment, where necessary, should be given and extra nourishment to mother and child should be made available, if required.

(4) To teach mother craft in all its branches with practical demonstrations, special emphasis being laid on the inculcation of sound hygienic habits in the mother and child.

(5) To keep children under observation, if possible, up to five years. Weight and progress records should be kept. From the second year onwards monthly visits would suffice, but mothers should be instructed to report any illness arising between visits to the clinic and a domiciliary visit by a doctor should, in such cases, be arranged.

(6) To organize occasional talks, by suitable persons, for husbands and fathers in order to secure their co-operation,

(a) in the care of their women especially during pregnancy,
(b) in the advisability of spacing the births of their children,
(c) in child-psychology,
(d) in aiding their wives in the maintenance of hygienic surroundings and in providing a well-balanced diet for the family and
(e) in the development of the faculties of children by means of manual occupations, special toys, games, etc.

(7) To give instruction on birth control. We have discussed this subject elsewhere in this report, and have expressed the view that where considerations of maternal health so require, it is definitely the duty of the State to provide facilities for imparting such knowledge. We have further expressed the view that the imparting

of information regarding birth control by Government agencies should be limited to institutions such as maternity and child welfare centre's and hospitals and dispensaries which render medical aid to women.

12. The centre should be provided with a weighing machine, a pelvimeter, an examination table and equipment for testing urine, taking the blood pressure, estimating hemoglobin, taking blood for laboratory examinations, etc.

13. Whenever practicable, a playground for children of two to five years of age should be provided as close to the centre as possible with toilet accommodation for mothers and children, quite apart from the bathrooms where the bathing of infants and children is carried out.

14. The centre should aim at becoming the focus of social activity in the area as far as mothers and children are concerned. The mornings should be devoted purely to health measures while certain afternoons during the week should be set apart for such things as needle work and knitting, invalid cookery, the management of children, home nursing, etc. An enthusiastic social worker should be selected for promoting such activities. Whenever favorable opportunities arise, talks should be given on health, on gardening with special reference to the raising of vegetables, and on current •topics of general interest.

15. Although we realize that the activities outlined above may not be possible of development so as to cater to the needs of the whole population of each primary unit during the early stages of the programme, we have described at some length the scope and nature of the work that the maternity and child welfare centre should perform because we feel that this institution, with its combined attack on the health and social problems of the Indian home, is bound to play a vital part in the programme of national reconstruction. If the principles of, hygienic living can be inculcated in the women and children of the country, no better foundation can be laid for building up the public health. Further, the wider outlook, which the social activities suggested by us at the centre are calculated to promote will, we have no doubt, help to raise the general level of welfare in the community.

16. Here is a field in which the active co-operation of the officers of all departments of Government, concerned with the promotion of social welfare will be of great value in advancing the work of the centre on sound lines. The maternity and child-welfare centre will form the focus from which the health care of mothers and children will radiate into the homes of the people. The woman doctor, the nurse and the midwife should supplement the medical attention provided at the centre by such advice and treatment as may be possible for them to give during their domiciliary visits. The vast majority of the confinements will, during this period, have to be conducted in the homes of the people. The two maternity beds, attached to the dispensary at the headquarter of each primary unit, and the six beds for the same purpose at the 30-bed hospital; can provide accommodation only for the most urgent cases. The conditions prevailing in many homes are likely to be far from being satisfactory for the conduct of delivery and, until the general housing and economic position improves considerably, these conditions may not show any material change. Some improvement will, no doubt, be

possible in all except perhaps the homes of the poorest people if housewife can be given proper instruction to prepare her home the advent of the new baby through such changes as she can probably effect within the limits of the family income. The extent to which the nurse and the midwife have won the confidence of the housewife will determine largely the degree of success which their efforts in the direction will attain. We recommend that standard sanitary outfit should be made available in all-necessitous cases.

17. In the three peripheral circles of each primary unit, the resident staff will be only a public health nurse, a midwife and a trained *dai.* It is anticipated that the woman medical officer will be able to) visit the headquarters of each of the three circles (the fourth being-[1] the headquarters of the primary unit) once a fortnight. The public' health nurse should hold a weekly clinic, while the medical officer will-attend every alternate clinic. The same lines of activity should! as far as may be practicable, be followed in the peripheral circles[1] as those described for the maternity and child-welfare centre at the headquarters of the primary unit. The nurse will normally carry out such routine treatment as will be prescribed by the doctor during her visits, while the latter will undertake all higher types of work required in respect of the women and children attending the clinics,

18. We have already referred to the importance of improving the nutrition of these women and children as an essential step towards the promotion of their health. Necessary provision has been suggested in the budget for each primary unit and the matter will be referred to in greater detail later in this chapter.

Headquarters of the Secondary Unit

19. At the headquarters of the secondary unit the 200-bed hospital should have, it is suggested, about 50 beds for maternity and gynecological cases, in the second five-year period of our short-term programme the 200-bed hospitals constructed during the first five years will, we hope, be enlarged so as to provide 500 beds. In this ease the provision for maternity and gynecological cases may be raised to about 125 beds. The better facilities expected to be available in these institutions will make a higher type of service possible, while the telephone and ambulance organization, we have recommended, will help to extend these facilities to the more serious-cases occurring in the primary units.

20. For the supervision of the maternity and child-welfare organization in the area under our scheme we have provided, at the headquarters of each secondary unit, an Assistant Administrative Medical. Officer and a Senior Public Health Nurse.

21. At the headquarters of each province, there should be, on the establishment of the Director of Health Services, a competent woman doctor with wide experience in the organization of health, services for women and children. It will be the function of this officer to promote the development of these services in the districts, co-ordinate their activities and, by constant supervision, ensure a high level of efficiency.

Utilization of the Services of Less Qualified Types of Personnel

22. We recognize that, in the early stages, the staff employed in individual primary units may not reach the standard recommended by us either in respect of numbers or of quality. It will not

be possible with the relatively small number of women doctors, who are available for service at present, to station a woman doctor in each primary unit during the greater part of the short-term programme. Similarly, health visitors, who possess only a lower type of qualification than public health nurses, will have to be employed for some years in place of the latter. Inadequacy of trained midwives will necessitate, for many years to come, the employment of the indigenous *dai* with such training as may be given to her to render her conduct of normal delivery reasonably safe. While recognizing the inevitability of such deficiencies in the early stages of our programme, we feel that the proposed organization is on sound lines and that, when adequate expansion takes place, it may be expected *to* provide an integrated curative and preventive health service for mothers and children.

The Long-Term Programme

23. By the time the long-term programme is completed, the health organization will have developed sufficiently to provide a reasonably adequate service. The population to be served in each primary unit will be relatively small namely, about ten to twenty thousand. Of the three women doctors who will be available, one will be in charge of the maternity and gynecological ward in the hospital in addition to any other duties that may be assigned to her, while the other two will be engaged on domiciliary service, which will include, within its scope, not only the care of maternity but also the treatment of all forms of sickness among women and children. Four public health nurses will assist these women doctors in the provision of adequate medical care to the people in their homes. Each of these will be a type of nurse who can deal not only with maternity and child welfare work but also with school health, tuberculoses and other forms of preventive health activities. The provision of six mid wives, four public health nurses and two women doctors for domiciliary service in a population of about 10,000 to 20,000 should help to ensure' a reasonable measure of health protection. The ten maternity and gynecological beds, to be provided in each primary unit hospital, are intended for the hospitalization of cases requiring greater care and attention than can be given in domiciliary service.

24. These provisions for each primary unit will be supplemented by the higher type of service which will be available at the head quarters of the secondary unit and of the district. The administrative staff, in charge of the maternity and child-welfare organization in each district, will also have increased by the time the long-term programme is completed. There will be a Deputy to the Officer-in charge of the District Health Services, who will be responsible for this branch of health administration, while she will have her counter part at the headquarters of the secondary unit. At these two places, there will also be corresponding officers for the supervision of the public health nurses. It should, therefore, be possible to ensure that the service for the health protection of mothers and children is maintained at a high level of performance throughout the district.

The Training of the Required Health Personnel

25. The most urgent need in connection with the development of maternity and child-welfare services is, as in the case of the other health services, the production in adequate numbers of the different types of workers. The proposals we have made, in the chapter on

professional education for the training of health personnel, will, implemented, provide types of workers of ail categories who should prove more satisfactory than those who are available at present Whether it be the doctor, public health nurse or midwife, a deficiency of major importance in the training now given is the absence of facilities" for acquiring actual experience of health administration, clouding domiciliary service. Our recommendations include the requirement that all health workers should have certain specified periods of field training before they become qualified for their respective professions, and this deficiency will, therefore, be met when the new types of doctors and other health personnel become available in sufficient numbers.

26. Another obstacle to a rapid expansion of the maternity and child-welfare organization is that the existing number of women doctors with the requisite special training and experience is extremely small. In the section dealing with professional education, we have emphasized the importance of providing facilities for specialization in the different branches of medicine, including maternity and child welfare, in the programme of postgraduate education. Such specialization will include obstetrics, gynecology and pediatrics in order to provide the specialists whose services are essential for the development of an efficient health organization for mothers and children. Side by side with this, the creation of an increasing number of qualified workers in the lower branches of the maternity and child-welfare organization will also form an important part of the professional education programme under our scheme.

Social and Economic Factors

27. We have already drawn attention to the importance of the social and economic factors in planning a campaign for the improvement of the health of mothers and children. In our view, the two most important among these factors are inadequate nutrition, which. Includes malnutrition and under nutrition, and the strain resulting from overwork either in the home or outside.

Nutrition

28. The pregnant woman, the nursing mother and the growing child require a more generous and nourishing diet than the general population, and they are, therefore, easily affected by reductions in the quality and quantity of the food they eat. The health services for these two sections of the population, howsoever elaborate and efficient, will fail to produce satisfactory results unless simultaneous measures are undertaken to improve their nutrition.

29. We have discussed, in the chapter dealing with nutrition, the problems associated with the task of raising the general level of nutrition in the country. The action required to be taken will cover a wide field and will include such measures as the augmentation, on a large scale, of the production of practically all articles of diet, their storage, transport and distribution, special steps for ensuring that the prices of essential articles of food are brought down to such a level as will place them within the reach of the poorer sections of the community as well as social and economic changes directed towards raising the income of the vast majority of the population. This wide range of administrative measures, which constitute some of the essential steps necessary for raising the general standard of nutrition, forms no doubt an important part of the objectives that

the national post-war reconstruction programme has in view. While the implementation of this programme can alone promote the attainment and maintenance of a reasonable standard of nutrition in the country, immediate steps are necessary to ensure that among the poorer sections of the community expectant and nursing mothers and children get such supplements to their diet as will help to provide the nutrition required. In our budget for each primary unit, we have suggested the provision of an annual sum of Rs. 3,000 in order to enable the Woman Medical Officer to make suitable additions to the diet of such mothers and children.

The Strain Resulting from Overwork

30. The strain, resulting from overwork, will affect a woman's health both during pregnancy and in the postnatal period. In the section relating to industrial health we have recommended the grant of maternity benefit to, and compulsory abstention from work for a period of six weeks before and six weeks after confinement by, all women employed in industry. We have also recommended that these concessions should, in due course, extend to all women gainfully employed outside their homes. We, therefore, look forward to the extension of maternity benefit to all classes of women workers except those who are subject to undue physical strain in the discharge of their household duties. It is true that in many cases, especially under the joint family system, the expectant mother gets relief from domestic work from her women relatives. But cases are not infrequent where the lone woman has to battle with a whole host of household duties, including the rearing of a number of small children. In such circumstances, adequate rest either before or after confinement becomes impossible. The supply of 'home-help by the public authority has become a recognized practice in England and other progressive countries, particularly during the lying-in period. The home-help is a woman who keeps the home for the mother while the latter is lying-in at home or in hospital. In Holland, such persons are required to have special qualifications in elementary nursing and in the management and feeding of infants. While, under present conditions, our primary concern should naturally be that of promoting the rapid development of the essential health services, we have no doubt that, in due course, the question of supplying trained assistance to expectant and nursing mothers will have to be considered in this country also, if the harmful effect of undue physical strain on such women are to be avoided.

CERTAIN OTHER MATTERS

(a) Nurseries for children

31. The provision of nurseries or crèches to relieve the mother, especially the working woman, from her responsibility for the care of the child during her hours of work, has been a noticeable development in all highly industrialized countries. But the nursery can also be made to play an important part in the education of the mother and the education and proper development, physical and mental, of the child. In this connection, we wish to draw attention particularly to what has been accomplished in the Soviet Union for the development of nurseries as an integral part of the child-welfare organization. We give as appendix 13 the relevant extract from Professor Sigerist's book, "Socialized Medicine in the Soviet Union.

He points out that, in that country, the nursery has become so-standardized that similar institutions are found in Moscow, in the Caucasus, in Central Asia and in Siberia. The institution serves a threefold purpose, namely, that of relieving the mother, of caring for the child and of educating the mother and child. Most nurseries take in about 50 to 125 children. Each institution is, generally, in charge of a woman doctor and she is assisted by a staff consisting of doctors, psychologists and nurses. Besides taking care of the child, from the point of view of health and physical comfort, the programme of the institution is so devised as to develop his social instincts as. Well as mental faculties and to promote the growth of healthy habits. Separate provision exists for children at the successive ages of 0-1, 1-2 and 2-3 years. The aim is to make them healthy in body and mind, to draw out their innate faculties and to make them self-reliant.

32. The mother visits the nursery to feed her baby and receives her lunch there free of charge. She learns how to feed, dress and take care of her child properly. Such instruction in mother-craft also helps her to take proper care of her later children. The influence that the nursery exerts on the home of the child is also important. Nurses sent out from the institution "inspect the living places regularly in order to find out under what conditions the children live." A more detailed description will be found in the appendix.

33. In Russia, the nursery has been organized mainly for women employed in industry. Sigerist has pointed out that, of the total number of industrial workers, about 39 per cent were women. Since 1937, when the book was published it is almost certain that this percentage must have risen. At first, the development of these institutions was mainly in urban areas, but with the growth of collective farms and State farms, nurseries spread to the countryside. It seems to us, however, that the establishment of such institutions can help to improve the health and welfare of mothers and children in the general community also. Apart from the medical benefits and physical comforts they provide, these institutions should promote the growth of community life on sound lines through the-development of the social instinct in the mother and, to an even-greater extent, in the child. There are other advantages also. The opportunities these institutions offer for the health education of mother and child are unique. Equally unique are the opportunities, they present to the health workers, and particularly the pediatrician, to study child life in health and disease as well as on the borderland.

34. Can the establishment of the nursery as a part of the maternity and child-welfare organization be considered as a practicable measure in India ? If it is to play its part in the development of child life on proper lines, the nursery service should not be confined to the children of the industrial portion of the community but should include, as far as possible, those belonging to all sections of the population. If nurseries, on the lines indicated above, are established in some of the larger cities of India, they will serve equally the needs of the industrial and non-industrial sections of the population of the areas in which they are located. We recommend that the establishment of such nurseries should be attempted, in the- first instance, in provincial capitals. In the beginning, women workers in industry will probably take most advantage of the facilities that are offered. But such facilities should continue to be avail able to all sections of the community and we have little doubt that

in due course, these institutions will extend their beneficent influence over the non-industrial section of the population also.

35. In making this recommendation, we are not oblivious of the many difficulties that exist. Even in the larger provincial capitals- caste and religious differences, with their restrictions relating to diet and certain other aspects of the life of the people, will probably render it difficult to maintain these nurseries on common lines for all children. On the other hand, a large part of the educative value of these institutions, will be lost if they are developed on sectarian lines. We believe, however, that we are right in assuming that the increased opportunities for the commingling of communities, which the post-war educational programme and developments in other fields of social reconstruction must create, will cause these differences among the various sections of the population to disappear gradually We also believe that the health services we have recommended will' contribute their share to this end, partly through the education that results from the contacts our workers will establish with the people in their homes, and partly through the opportunities that the facilities offered by the health services will create for the people to come- together. We, therefore, recommend that those nurseries should not be developed on sectarian lines. The provision made for food, recreation and other activities should be on a common basis for all' mothers and children.

(b) Health Education

36. We consider health education as one of the most important functions of the maternity and child-welfare organization. The home visits paid by the doctor, nurse and midwife, the consultations with mothers at the antenatal, postnatal and infant-welfare clinics all afford opportunities for instructing them in the maintenance of their own health and of that of their children. The nurseries, which we have described in the preceding paragraphs, will, when established, provide even greater opportunities for such education.

37. The health education of mothers and children must naturally form part of the wider scheme for similar instruction to the community, as a whole. The measures to be adopted in respect of the latter have been considered in a special chapter. There we have suggested the organization of the necessary measures on a broad basis so as to include the numerous recognized methods of imparting information, such as the radio, printed literature, personal talks, health dramas, exhibitions and songs, as well as every other channel for placing before the people the importance of health and the method of securing and maintaining it. All this educational work will no doubt, benefit the mother and child, but the most lasting results are likely to be those derived from the sympathetic advice and guidance that individual members of the maternity and child welfare organization can make available to mothers and children in the course of their daily duties.

(c) Maternity Homes

38. The establishment of private maternity homes, in response to the growing demand of the public for institutional facilities for confinement, is a noticeable feature in some of the larger urban centers. We wish to emphasize the importance of local health authorities exercising the strictest possible control over the establishment and maintenance of such institutions. The existing homes.

should all be registered, inspected and brought up to desirable standards in respect of buildings, staff, equipment and maintenance. The establishment of new institutions should receive the prior sanction of the health authority in order to ensure that due regard will be paid to these requirements. It is desirable that the Provincial Ministry of Health should prescribe suitable standards in respect of these and make it incumbent on local authorities to enforce them.

(d) Voluntary Effort in the Field of Maternity and Child-welfare

39. In this, as in other fields of health endeavor, voluntary organisations have played an important role in the past. -Enthusiastic voluntary workers were responsible for starting the training of indigenous *dais,* of mid wives and of health visitors, all of whom are essential personnel for the maternity and child-welfare organization. Voluntary societies have also been responsible for the establishment and maintenance of a large number of maternity and child-welfare 'Centers.

40. In 1930 voluntary work in this field was centralized by the establishment of the Maternity and Child Welfare Bureau under the Indian Red Cross Society and the appointment of a Director of that Bureau who could, through the various provincial and local branches of the Red Cross Society, promote the development of this branch of health activity in different parts of the country. Indeed, in certain provinces *(e.g.,* the United Provinces and the Central Provinces) the Provincial Governments concerned have transferred their responsibility in respect of maternity and child-welfare work to the respective provincial branches of the Indian Red Cross Society by giving them large grants and permitting them to develop and maintain the organization as part of the activities of the Society. The only control that the provincial health authorities have over the organization seems to be through the representation of health officials, such as the Director of Public Health, on the executive committees of the provincial branches of the Society.

41. While fully recognizing the need for and appreciating the value of voluntary organisations in the field of health, we hold the view that their activities should supplement rather than supplant the legitimate functions of Government in this sphere. The implementation of our proposals for health development in the provinces will, no doubt, bring this branch of health administration within the purview of the Provincial Health Department, but the expansion of our scheme over the whole province will take time and, in the areas outside the scheme, the present state of affairs will no doubt continue. We have recommended that the Officer in charge of the District Health Services should supervise the development of our scheme as well as control the health administration of the area unaffected by it. In the latter, he may find that he has no authority to enable him to regulate the functioning of the existing maternity and child-welfare organization. This is far from satisfactory.

42. We are therefore of the opinion that provincial governments should exercise closer supervision and control over the maternity and child-welfare activities of the Red Cross Society and, indeed, of all similar organisations. There is abundant scope for voluntary effort to supplement what governments can do in practically all branches of health service, and every available agency should be utilized in the endeavor to bring effective health services within the

reach of all. But the responsibility for providing such services rests upon the governments, and they "cannot relieve themselves of any part of that responsibility by making grants to voluntary organisations over whose activities they have very little control. While voluntary effort should be welcomed and encouraged, it should be so. Supervised and controlled as to ensure that its health service conforms to the standards prescribed by the public health authorities. This is not ensured by the presence of a representative of the health department on the Committee of the organization concerned. There must be regular inspection and the governments should have power to take whatever steps may be necessary to ensure that the health activities of voluntary organisations are maintained at a satisfactory level.

A Health Card for Every Individual

43. The ultimate aim of the health organization is to ensure continuity of effective health protection to everyone from the prenatal stage, through childbirth and the subsequent years of life to death. An accompaniment of such care should be the provision of a continuous record of the individual's health; We suggest that every baby should be given a health card as soon as it is born It should be in duplicate so that one can be kept at the headquarters of the primary unit concerned, and the other given to the parent. On this card should be given information regarding the health of the mother in the prenatal period as well as any details of value in respect of childbirth from the point of view of the child's health. When our health organization becomes fully developed and covers, within its scope the vast majority of the population, most of the infants that are born will start their life with this health card. It should not be difficult, under the conditions that would then prevail, to enter on the health card of each child, from time to time, such details of sickness and of health as will constitute a running commentary on his physical and mental condition. Up to the end of the school going age, the majority of the children are likely to remain in the place where they are born, so that the entries concerned will be made locally. Up to that stage, it should be relatively easy to keep the individual's card and the one kept at the headquarters of the primary unit filled in properly. In later years when he leaves his place of birth, he could carry his card with him and it would provide an invaluable previous medical history as an aid to diagnosis and treatment.

44. We are not putting forward this idea of a health card for every individual as an objective to be realized in the immediate future. We understand that, even in the Defense Services, with all the advantages of having to deal with a disciplined group of people, the working of the health care system has not been entirely satisfactory. We also realize the far greater difficulties that will arise when dealing with the civil population. In the first place, the citizen must become suitably educated before his or her active co-operation will become available for the successful working of this health card scheme. Secondly, the health services provided for the people must be sufficiently developed in order to enable the individual to secure that continuous medical attention, curative and preventive, which the system requires. While recognizing all this, we still venture to put forward this system as an objective for the future to be kept in view by health administrators and the public alike.

CHAPTER IX

HEALTH SERVICES FOB SCHOOL CHILDREN

Introduction

1. We have already expressed the view that the special services, which are established for certain sections of the population, should not function independently of the general health organization for the community, in the past, the tendency for such special services to grow up as separate entities has been a noticeable feature in all countries. The reason for this is not far to seek. In our review of modern trends in the organization of national health services we pointed out that, in no country, except Soviet Russia, has there been developed as yet, a health service which offers protection, curative and preventive, to all sections of the population. Special health services for mothers and infants and for school children in other countries were started at different times and under different administrative authorities and the question of coordinating their activities and of bringing them together as parts of a general health organization could not be considered in the absence of a comprehensive national health service embracing both the remedial and preventive aspects of medical practice. We may, as an illustration, make a reference to England and shall confine ourselves to the question of the school health service. In that country, the Board of Education (or the Ministry of Education) acquired powers in 1907 to make provision for the medical inspection and treatment of school children through the local authorities entrusted with the task of controlling education. The idea underlying such provision for the supervision of the health of the school child by the education authority was that the child's health should be protected in order to enable him to benefit fully from his education. The fact that the care bestowed on the child through his school life was but a part of the continuous health Protection he was entitled to receive throughout his life was lost sight of. In consequence, the provision of medical care for school children became recognized as the responsibility of the education authority and not of the health authority. This position was modified by the Ministry of Health Act in 1919 when it was provided that "all the powers and duties of the Board of Education, with respect to medical inspection and treatment of children and young person’s", should be transferred to the Ministry of Health. At the same time, it was decided that the Minister of Health, while retaining the ultimate right to determine the standards to be adopted from time to time in regard to the character, adequacy and efficiency of the provision made for medical inspection and treatment, should transfer to the Board of Education his responsibility for the administration of the school health services. Nevertheless, in order to secure coordination of effort between the school medical and general health services, it has been the practice to make the Chief Medical Officer of the Ministry of Health the Chief Medical Officer of the Board of Education also and. in local areas, to appoint sub-committees of education and health authorities to consider matters of mutual-concern, to administer joint undertakings, to appoint a common staff so that, in the great majority of cases, the local Medical Officer of Health is also the School Medical Officer, and to promote the use

of the same premises, wherever possible, and of common facilities, such as the services of dentists.

The Present Position in India

2. In India, school health services are non-existent in most parts of the country and, where they exist, they are mainly in an imperfectly developed state. There are, however, two valuable reports on the subject which provide an illuminating study of the associated problems and put forward specific recommendations for their solution. A report issued by a Joint Committee of the Central Advisory Boards of Education and of Health has dealt with this subject in great detail. The recommendations set forth in this report have been given practical shape in the Report on Post-war Educational Development in India which was issued by the Central Advisory Board of Education in 1944. In putting forward its proposals for the organization and administration of school health services, the Joint Committee had before it, as a model, the practice in England which has already been briefly indicated in this chapter. It had also to accept the existing health administrative system in India whereby the medical and public health departments are functioning independently in the provinces. The Committee did not visualize the possibility of a comprehensive health service which would combine in it both preventive and curative health functions for all sections of the community. In these circumstances, it recommended the creation and maintenance of a school health service which would be separate from the existing provincial health services, preventive and curative, and which would be under the administrative control of the Education Department. Recruitment to the school health service would be from the provincial medical and public health departments. In order to promote the coordination of the activities of the school health service and of those of the existing health departments, the Joint-Committee suggested the establishment of a Sub-committee with the Director of Public Instruction and the heads of the Medical and Public Health departments as members. Another suggestion was that, either of these two medical officers, as may be found expedient by the Provincial Government concerned, might be made the Chief Medical Officer of the School Health Service.

The Health Functions of the School Health Service to be under the Health and not under the Education Department

3. In view of the reasons set forth in the earlier paragraphs of this chapter and in view of our proposal for the establishment of a comprehensive national health service, which combines within it preventive and curative health functions, we believe that the suggestions of the Joint Committee referred to above require modification. We feel that, in England, the existing practice is a compromise based on the experience of the past development of the school health service in that country. In proposing a scheme for India, where we are practically in the position of starting the organization from the beginning, we believe it will be of advantage to recognize that the question should be considered primarily from the standpoint of the school child for whom the service is being provided. From his point of view, continuity of health protection is of fundamental importance. Such continuity requires that the provision of medical care for school children should not be isolated from the general health service. Another important objection to the development of the school health

service, outside the general health organization, is that a duplication of trained personnel and of institutions will become inevitable in. many directions while, in the interests of the development of the national health programme, it seems essential that such duplication should be avoided as far as possible. We are, therefore, incorporating, this principle in the proposals we put forward later in this chapter. We recognize at the same time, the need for the closest possible cooperation between the medical officer and the school teacher in promoting the health and general welfare of the school child. The teacher will, indeed, play an important part even in the organization of preventive and curative medical care for the child in the early stages of our programme, while his services are indispensable at any stage in connection with certain other forms of school health activity. Our proposals will, therefore, make provision for close cooperation between the health and education staffs.

The Functions of a School Health Service

4. The duties to be performed by a school health service fall broadly into two groups:

(1) health measures, preventive and curative, which include (a) the detection and treatment of defects and (b) the creation and maintenance of a hygienic environment in and around the school, and

(2) Measures for promoting positive health which should include (a) the provision of supplementary food to improve the nutritional state of the child, (b) physical culture through games, sports and gymnastic exercises and through corporate recreational activities and (c) health education through formal instruction and the practice of the hygienic mode of life.

5. The duties enumerated under (1) should be performed by the health organization while those under (2) will devolve on the school teachers. This classification indicates broadly the division of functions between the health organization and the school staff in a well-developed school health service although, as has already been pointed out, the utilization of the services of the school teacher, with such training as can be given to him, will be essential, in the early stages, even for the carrying out of elementary preventive and curative health measures.

OUR PROPOSALS

6. It seems to us inadvisable to start the school health service on too extensive a scale during the early stages of our health development programme. We believe that it is much better to develop the organization with care and by stages so as to ensure satisfactory results rather than attempt too much in the beginning and thus court the possibility of failure in making this suggestion, we have been influenced by two considerations, namely (1) the medical officer in the primary unit has various other duties to perform and he will, therefore, be able to devote only a limited time to the development; of the school health service, and (2) the school teachers, who will have to carry out certain health duties, will require careful training and continuous supervision if the efficient functioning of the organization is to be ensured. Finally we would point out that the Joint Committee of the Central Advisory Boards of Education and of Health has drawn attention to the frequency with which Provincial Governments have, in the past, started a system of school medical

inspection and given it up after a short time. We wish to see that such a policy is avoided in the future and we would, therefore, urge the need for formulating a well-thought-out scheme capable of producing demonstrable results, even though it may embrace only a limited section of the school population in the early stages of development.

7. We shall first make certain general suggestions regarding the proposed school health organization and then indicate the stages for its development.

(1) In each primary unit the male medical officer should normally be placed in charge of the school health service. It will be recalled that the woman doctor will, in addition to her responsibility for extending, as widely as possible, medical care among the women in the primary unit, have also to undertake the organization and control of the maternity and child-welfare service. We, therefore, suggest that the male doctor should be responsible for the school health service.

(2) The scheme should, in the beginning, be restricted to primary school children. We anticipate that in accordance with the recommendations that have been made for post-war educational development, compulsory education will be introduced in respect of all children between the ages 6 and 13. Of this period the primary school stage is between 6 and 11 years. On a rough estimate, the number of children in this age group in a primary unit with a population of 40,000 is likely to be about 5,100. The Joint Committee has suggested that the number of school children to be entrusted to a full-time school medical officer might be about 5,000. In view of the other duties which our school medical officer will have to perform, we believe that the number of children to be included in the scheme in each primary unit should not, in any case, exceed 1,000. In order to facilitate frequent and close inspection of the work of the teachers who carry out health duties, we would suggest that the primary schools included in the scheme may be restricted to the town or village which forms the headquarters of the primary unit. If the population of school children thus served does not approximate 1,000, the scheme may be extended to the surrounding area, it being kept in view that such expansion should not make it difficult for the medical officer to carry out adequate supervision over the whole organization. This is the primary consideration and not the idea that the number of children included in the scheme should be about a thousand.

Our proposal that, in the early stages, the scheme should be limited to primary school children will, it is believed, remove any objections that might, otherwise, be raised against the suggestion that the male doctor should examine school children of both sexes. When the high school and college classes are included in the scheme, a woman doctor will obviously be required for examining women students.

(3) From each school, at least two teachers should receive training in health duties. They should be given a special additional remuneration for such duties and Rs. 10 per month would be a reasonable figure for adoption throughout the country.

8. We suggest the following stages for the development of the scheme; —

First Stage

It seems to us desirable that the proposed school health organization should first be developed in an area close to the headquarters of the Provence. The field training centre, which will be established in association with the medical college there, will provide excellent facilities for such an experiment.- The Department of Preventive Medicine and Public Health in the college can be placed in charge of it while the participation of the Director of Health Services, the Director of Public Instruction and their assistants in the development of the scheme will be of great value. It is suggested that the Professor of Preventive Medicine, the Assistant Director of Health Services in charge of school health and a suitable officer deputed by the Director of Public Instruction should form a small sub-committee to work out the details of the programme and to supervise its implementation.

The scheme should help—

(1) to demonstrate the course of training to be adopted for teachers;

(2) to develop the technique of school health administration, including the duties to be performed by the different members of the organization, to keep records and to define the manner in which the health functions are to be integrated with other aspects of the programme such as health education and recreational activities. While the teacher has an important part to play in the provision of medical care, the health staff can, as will be shown later, assist in the development of those activities which are mainly the concern of teachers and

(3) To indicate the probable cost of such a scheme.

The organization will also provide facilities for training doctors and nurses in school health work.

It is believed that this stage will probably be completed in one year. During this period the school health programme need not be extended over all the primary units of the field training centre. It is suggested that it may be confined to five such units.

The Second Stage

This would mark the period of extension of the school health programme to the districts. Such extension may, it is suggested, be carried out in two steps. The first would be the organization of training facilities for teachers at the headquarters of the secondary unit, namely, the secondary health centre. The Deputy Administrative Medical Officer should be made responsible for school health work. Such officers from the different districts should be given an opportunity to study the working of the scheme at the provincial headquarters and, with such study and with suitable literature indicating the detailed working of the programme; it should be possible to promote the development of district activities in this field on fairly uniform lines. The secondary health centre will normally be located in a large town, and the training course can be started by bringing together two teachers from each of the primary schools in that town. When a sufficiently large number of teachers is trained, a demonstration of the scheme should he attempted by applying it to this town,

At the same time, the training course should be continued, selected teachers from a certain number of primary units included in the secondary unit, being brought over to the headquarters of the latter for such training. The medical officers of these primary units should also be given an opportunity to familiarize themselves with the organization and maintenance of the service. The second step in the extension of the scheme in the district will be the inauguration of the service at the headquarters of individual primary units.

Two More Stages

We envisage two more stages. These constitute extensions of the scheme so as to include within its scope (1) the whole area of individual primary units and (2) the students of secondary and high schools and of colleges. For reasons, which will be explained later, we cannot at present see how provision for a territorial expansion of the service in primary units can be made till about the latter part of the fourth quinquennium of our health programme. The first essential is to extend the proposed general health service throughout the area of individual districts, and this will take up at least the first seventeen or eighteen years of the programme and to require all the trained medical staff likely to be made available during the period. As regards the second of these two stages mentioned above, we are putting forward certain suggestions later in this chapter. !

9. We may now present, in greater detail, our views regarding the nature and scope of the school health work that should be developed at the headquarters of primary units.

School Health Work in a Primary Unit

10. The school health work to be carried out in a primary unit may be considered under the following heads:—

(1) Medical inspection.

(2) Provision of medical care, curative and preventive. Such medical care should include domiciliary and institutional service. It should also include dental service.

(3) Improvement of environmental hygiene.

(4) Improvement of the nutrition of the child.

(5) Physical education.

(6) Health education.

11. (1) *Medical Inspection.* — The Joint Committee recommended two detailed medical examinations for primary school children, the first in the sixth year of the child, as soon as possible after his entry into the school and the second in the eleventh year when the primary school stage is being completed. The Committee has pointed out, at the same time, that these detailed inspections should be supplemented, in respect of some children, by more frequent medical examinations. Such children include those who are found defective at the first examination as well as those who may be found by parents or teachers not to be making satisfactory progress physically, mentally or socially. While it is true that a careful parent or teacher can detect departures from normality, which a cursory medical examination may fail to reveal, the extent to which parents and teachers can help in such detection will depend largely on the degree to which

their faculty of intelligent observation has been developed. We shall make later in this chapter, certain suggestions for encouraging parents and teachers to play their part satisfactorily in the school health programme. In view, however, of the limited nature of the staff and facilities available to us, the recommendation of the Joint Committee for only two detailed examinations of every pupil should be accepted.

12. (2) *Provision of medical care, curative and preventive.* — The normal health services, remedial and preventive, which will be established under our scheme will, of course, be available to school children also.. The dispensary and the domiciliary visits by the doctor and the nurse constitute the main provision for this purpose in the primary unit. The fact that the medical officer will himself carry on work at the dispensary three mornings a week and that he can secure the services of the nurse, whenever necessary, to visit the homes of pupils should help to ensure that the measures that he prescribes as the school medical officer in respect of individual pupils will be carried out as far as circumstances permit. Where a patient requires higher types of service, such facilities as are available at the 30-bed hospital and the secondary health centre hospital, can also be secured. But we desire to see these provisions supplemented by more specific measures calculated to improve the health of the school child, and the following recommendations are made with this end in view.

13. In the last chapter, when dealing with special health services for mothers and children, we described briefly the part that a maternity and child welfare centre can play in promoting health work among them. On the same lines, we suggest that a school clinic should be established as part of the programme of health care for school children. It is suggested that, in the beginning, the clinic should hold sessions in the dispensary on three afternoons each month. In view of the inadequacy of the provision for general medical treatment in the early stages of our health programme, the school clinic will have to devote a part of its time to such treatment. Nevertheless, too much time should not be taken up by such routine services. Certain specialized types of service, such as dental care and the treatment of conditions relating to the eye, ear, nose and throat, which are relatively common among children, should receive special attention. As regards dental service, we have already pointed out, in our description of the short-term programme that mobile dental units, based on the secondary health units, will operate in the primary units and will make available such service at least to limited sections of the population. Maternity and child welfare organisations and school clinics will receive dental service from such mobile units.

14. It is desirable that the parents and the class teacher in charge of the child should be encouraged to be present at the clinic when examinations are carried out. This will enable the doctor to issue such instructions, as he may consider necessary, to enable them to take simple precautionary measures or to observe the child and report on the progress he makes or any setback that may take place.

15. Apart from the treatment facilities provided at the clinic a certain amount of routine treatment will also be carried out in the school, under the guidance and supervision of the medical officer, by the two teachers who will have been specially trained for this purpose.

Other functions for which these teachers are to be trained should include the daily examination of school children in order to improve the standard of personal cleanliness, supervision of the sanitation of the school and its environment and health education of children within limited fields. The teacher should also be trained in the technique of vaccination against smallpox.

16. A record of weights, taken at periodical intervals, gives valuable aid in interpreting the state of health of a child, and each class teacher should be made responsible for maintaining this record and for making it available to the medical officer once in six months.

17. As in the case of the maternity and child-welfare centre, we desire to see that the school clinic develops into an organization for bringing together the children, their parents and teachers. We would, therefore, suggest that periodical meetings should be arranged for which interesting and educative programmes should be developed. Educational films can be shown, short talks on health matters arranged and people with special talent for music and other forms of entertainment, whether among the pupils, teachers or parents encouraged to play their part towards making such gatherings a success. The atmosphere of goodwill that can thus be developed will be of advantage to all concerned.

18. We are anxious that all teachers should take an active interest in our school health programme. Although the two who are specially trained to carry out certain health duties, will be required to do more than the others, we feel that every one of them has his part to play. For instance, the class teacher can, if observant, bring to notice facts about a boy's indifferent health or anti-social tendencies more easily than the other teachers are likely to do. The physical instructor should be able to separate, by signs of early fatigue or in other ways, children to whom the normal amount of exercise prescribed for all is doing more harm than good. These teachers, if they can receive useful hints from the doctor, will undoubtedly be able to discharge more efficiently the duties expected of them.

19. As regards the parents, theirs is the longest and most sustained influence on the health and welfare of the child. Any scheme that neglects to enlist the sympathy and co-operation of the parents may largely fail to achieve the desired results. Our proposal to make the school clinic a centre for social activity so as to bring together the children, parents, teachers and the school health staff is, therefore, in our view, an essential part of the programme for improving the health of the school child.

20. We fully realize that the present-day school teacher, ill-paid and overburdened as he is with responsibilities towards his own family which he can hardly discharge satisfactorily, is but an imperfect instrument through which to attempt to develop a programme of health activity on the lines we have indicated. We have, however, no choice in the matter and would, therefore, suggest that in selecting teachers to perform the health duties contemplated in our scheme, the greatest possible care should be exercised to ensure that the two best in each school are chosen. The training that is imparted, the additional remuneration we propose and the close and continuous supervision which will be exercised should all help to secure a reasonable measure of efficiency. But our hope for the future is based on the prospect of a better class of school teacher

being provided as the result of post-war educational developments. It is hoped that he will have received a higher standard of general education, will be better paid and will be actuated by a more quickened sense of social service than the teacher of the present day. It is on him that we paid our faith for the development of a cooperative effort to which the school staff and the health organization will contribute of their best in order to promote the health and welfare of the school child.

21. (3) *Improvement of environmental hygiene.*—this is a problem of the highest importance. Many school buildings will require considerable alterations before they become satisfactory from the sanitary point of view. Wholesome drinking water, sufficient toilet accommodation, and facilities for washing will all have to be provided if the desired improvement in the hygienic habits of the pupils is to be promoted. To give formal class room instruction regarding cleanliness, without providing the necessary facilities for the children to put into practice what they are taught is worse than useless. Apart from the harm it causes by failing to give the child proper instruction in the hygienic mode of life, such a divorce of practice from precept will have a serious detrimental effect on the outlook of the growing child. We feel that this is a matter which requires urgent attention from the authorities concerned.

22. (4) *Improvement of the nutrition of the child.*—A mid-day meal providing a balanced diet, in accordance with modern conceptions of desirable nutritional standards, will perhaps help to improve the health of the growing school child to a greater extent than most other measures. Many children, especially in the rural areas, walk distances of, two or more miles to their schools and back home every day. With such physical exertion in 'addition to any games and other forms of athletics in which they may take part, it is not surprising that, even from the point of view of energy value, many children do not receive an adequate amount of food. Moreover, as a sufficient quantity of essential articles such as milk and green leafy vegetables are often lacking in the food of an appreciable proportion of these children, there is the added disadvantage of living continually on an ill-balanced diet. The provision of a good mid-day meal at the school should help to rectify these defects to a large extent, and we recommend that it should be a compulsory feature of the school health programme. While there is no doubt some justification for claiming that the State should not be made to pay for children, whose parents can afford to meet the necessary expense, we feel that, if primary education is to be made compulsory and free to all in accordance with the recommendation of the Central Advisory Board of Education, the additional cost for the school meal should also be made a charge on the public funds. Those who can afford to pay will, of course, be contributing to public funds through local and provincial taxation. But we are not wedded to any specific form of raising money to meet the expenditure on school meals. We would only urge that the provision of a balanced mid-day meal, of proper quantity and quality, to all school children should form an essential part of the school health programme.

23. (5) *Physical education.*—We have discussed the question of organizing the physical education of school children in the chapter dealing with that subject and shall, therefore, confine ourselves here to

the consideration of the subject in relation to the school health programme. We are in full agreement with the view of the Joint Committee that the physical instructor should receive training "in the elementary principles of physiology, of the hygienic mode of life and of nutrition" and that he should be trained "to detect early signs of fatigue in the child and to regulate (under the guidance of a doctor in certain cases) the nature and amount of exercise for individual pupils". The doctor should give, as the result of his medical examination, any special instructions regarding physical exercise that may be required in respect of individual students. The physical instructor should, on his part bring to the notice of the doctor any cases where he has reason to believe that exercise should be regulated in accordance with medical advice and he should be present when such children are examined by the doctor.

24. We also endorse the recommendation of the Joint Committee that provincial Health and Education authorities should draw up a code on physical education, which should include advice on the medical aspects of this subject, and that a system of graduated exercises, to suit the requirements of different types of children, should be formulated.

25. (6) *Health education.*—Formal class room instruction in health matters should, in respect of the primary school children, be reduced to the minimum. What is essential is that hygienic habits should be inculcated. A health parade every morning to ensure that each child conforms to certain standards of personal cleanliness is of great value. In the school, children can be taught by observant and sympathetic teachers to rectify many of the undesirable habits they have developed. For instance, spitting can be discouraged, the intelligent use of the sanitary conveniences provided in the school premises can be encouraged, the necessity for avoiding possible infection of neighbors through coughing and sneezing without due care can be brought home to the children and the danger of catching infection through infected food and water can be vividly described to them if specific instances based on local occurrences can be quoted. As has already been pointed out, an essential part of this health education campaign is that the school and its surroundings must be kept in a hygienic condition and that all the necessary facilities should be provided to enable the children to carry out the instructions given to them regarding cleanliness.

26. As regards formal instruction, the spoken word and the visual impression are more important in the case of such young children than printed literature. Therefore, short talks accompanied by colored posters or magic lantern shows are much better than books. In regard to personal hygiene, repeated performance by the pupils of the necessary measures under the supervision of the teacher is essential. The example set by the latter is also of great importance because a teacher, who flagrantly violates the instructions he gives will carry no influence with the children. The remedy lies in the systematic teaching of hygiene in teachers' training schools. But we believe that a marked improvement in the present situation will be seen only when a better class of teachers, with a higher standard of

training and better emoluments, becomes available as the result of the post-war educational programme.

An Extension of the Health Service beyond the Primary School Stage

27. We anticipate that, under the programme of development of the school health service indicated earlier in this chapter, the organization at the provincial headquarters and those associated with the headquarters of secondary units, will become centers for providing short courses of training in school health work to doctors and nurses. We have suggested that, at the early stage, the school health service should confine itself practically to the headquarters of the primary unit. Even so, it will probably take the first five years of our short-term programme before such an organization becomes established and works satisfactorily in every primary unit under the scheme.

28. A point for consideration is whether the service should, at this stage, be extended further into the area covered by individual primary units or whether it should be expanded so as to include gradually the students of the secondary and high schools and college classes. The main obstacle to an extension of the scheme territorially in a primary unit is the inadequacy of trained staff. This deficiency will not be made up in the second quinquennium of the short-term programme, because our plan is that such staff of all types, as may be created under the various training schemes, should be utilized for the opening of new primary units, and that the general health organization should be extended to about half the population of each district by the end of the first ten years. No strengthening of the staff in individual primary units is contemplated at this stage. If the implementation of all our proposals proceeds on anticipated lines the third and fourth quinquennia should witness the rate of progress accelerated inasmuch as the large scale training programme of the first ten years would have begun to bear fruit. Nevertheless, we find it difficult to believe that individual districts will be covered by the health organization before the end of the first 17 or 18 years of our programme. It is only after this stage is reached that a strengthening of individual primary units by additional staff should be undertaken. Therefore, as far as we can see, the possibility of expanding the school health service for primary school children, much beyond the limits of the headquarters of each unit before the end of the first 17 or 18 years, seems to us to be remote.

29. In these circumstances, there would appear to be little hope of extending the service, within this period, to the students of secondary and high schools and of colleges particularly on any large scale. We would, however, suggest for consideration the possibility of such extension in certain limited areas where suitable conditions will probably be available by the latter half of the second quinquennium of our health development programme. We have, in mind, the field training centers attached to individual medical-colleges. These will normally be located in the larger cities of a province, and the resources of the local health organization supplemented by those of the medical college may justify an attempt to extend the school health service to. at least, the students of secondary "and high schools in such cities. The primary consideration should be that the organization must function on sound lines and, wherever this condition can be fulfilled, an extension of the service should be attempted. By the time this experiment" has been tried, it may well

be that many of the secondary health centers will also have developed to the stage when they can undertake such an extension of the school health service. The administrative and technical procedure for the expanded service which will, in the meantime, have been worked out in the training centers associated with medical colleges will prove to be of assistance to the secondary units in expanding their own-school health services.

Co-operation between Health and Education Authorities

30. In the preceding paragraphs, we have discussed our recommendations for developing a school health programme and, at more than one place, have stressed the need for the closest co-operation between the health and educational authorities. We now put-forward certain proposals for ensuring such co-operation both locally and centrally.

31. *A District.*—If our suggestions for the future development of local self-governing institutions are carried out, there will be a District Health Board and a District Education Board functioning over practically the whole area of individual districts. We suggest that, in each district, a Joint Committee of the District Health and District Education Boards should be established. The fund3 necessary for the health activities of the school health programme will be a charge on the revenues of the District Health Board while cost of such items as physical education, school meals and health education should be met from the funds of the District Education Board. The remuneration to be paid to the two teachers in each school for the health duties they perform should, of course, be met from the health budget. The Joint Committee we have recommended will be responsible for the distribution of the funds made available to it by the two Boards and will also serve to bring the influence of public opinion to bear on the working of the school health organization.

32. *Provincial Headquarters.*—at the headquarters of the province, there should be a coordinating committee of which the Director of Public Instruction and the Director of the Health Services should be members. Its chairman may be a distinguished education-its. We do not wish to see this coordinating committee at the provincial headquarters made unduly large, but representatives of the managements of private schools as well as of approved associations of teachers and of parents should, in our view, find a place on it.

33. This committee will advise Government on all matters relating to school health administration, including the distribution of grants-in-aid, and, within the limits of the powers given to it by Government, it will co-ordinate the activities of the Joint Committees in the districts.

34. As regards the administrative staff on both sides (health and education), the members of the health organization will belong to provincial cadres in the Health Department of the province. The Co-ordination Committee at the headquarters of the province should, in these circumstances, be able to ensure that the desired measure of co-operation between the health and educational staffs is secured in order to promote the development of the school health service on sound lines.

CHAPTER X

OCCUPATIONAL HEALTH INCLUDING INDUSTRIAL HEALTH

Introduction

1. In this chapter we shall deal with the questions relating to the maintenance of the health and working capacity of all those who are gainfully employed outside their homes. We have purposely used the term Occupational health' in the title of this chapter because many forms of employment fall outside the range of activities normally included under the term 'Industry. For instance, the working conditions of the employees, including the sanitation of the environment, hours of work and provision of certain facilities such as for meals and rest, require regulation in a public office or a large shop to the same extent as in an industrial establishment. Further, similar protection should be given to workers in the building trade and to those employed in transport by land, sea or air and in various other occupations, although such workers are not normally included under the term industrial labor. Lastly, agriculture which is the main occupation in the country and has associated with it the largest population of workers, should come within the range of health supervision in order to ensure that conditions unfavorable to health are eliminated as far as possible from the working environment of this section of the population also. An occupational health service developed by the State should therefore, embrace, within its scope, all persons who are employed outside their own homes. We realize, however, that the creation of such a service can be considered only as a long-term objective and that, in the immediate future, Governments will have to concern themselves with measures mainly for industrial workers including within that term those who are employed in factories, docks, mines, plantations, transport services and certain other occupations. While it seems desirable to keep in view the goal that has to be reached and to remember that the provision of conditions favorable to health should be an essential part of the organization of all types of employment, we shall deal here only with the health of industrial workers as defined above.

2. The factors which influence the health of the worker can be divided into two broad groups, namely, (1) those which are associated with his working environment and (2) those which he shares with the rest of the community in the home and in the places of public resort to which he usually has access. In regard to the latter, it seems reasonable to hold that the workers should share the facilities for health protection that the State provides for the general population and this is what we recommend.

3. On the other hand, as regards the factors in the working environment which tend to produce ill-health, the worker has the right to demand special measures for his protection. The organization of an industrial health service is meant to meet this need. The aims of such a service should be twofold, namely that of minimizing, as far as possible, the detrimental effects associated with the worker's occupation as well as that of promoting measures which are designed to create optimum working conditions and to increase his capacity for work and general sense of well-being. If this dual aspect of the

worker's health requirements be kept in mind, it will become clear that the provision of preventive and curative health care outside the place of work or for general ailments, which may arise without reference to his occupation cannot be considered as the responsibility of the industrial health organization. It is recognized that sickness and incapacitation arising out of any cause have their repercussion on occupational efficiency and that these are therefore to be eliminated as far as possible. From this wider standpoint the provision of adequate health protection to the members of a worker's family can also be considered as an essential function of the industrial health service, in as much as the worry, anxiety and their adverse effect on his own health, which are likely, to arise from sickness among those who are dependent on him. must reduce his working capacity. While recognizing the force of this argument, it is believed that clarity in respect of administrative procedure will be secured by accepting the position that the responsibility for the health of the worker outside the range of functions of the industrial health service as defined above as well as for the health of the members of his family must devolve on the general health service for the community and that, in the interests of the nation as a whole, both types of services must be developed to the fullest possible extent.

The Aims of an Industrial Health Service

4. The aims of an industrial health service have been excellently described by the Social and Preventive Medicine Committee of the Royal College of Physicians of London in their Second Interim Report, which deals with industrial medicine, (January 1945) in the following terms:—

(a) to promote the general health of the worker by the provision of a good working environment and by fitting the worker to that environment;

(b) to prevent occupational disease;

(c) to assist in the prevention of injuries at work;

(d) to organize and supervise a service for the emergency treatment and care of injured and sick workers at their place of work;

(e) to take an active part in the restoration to full working capacity of workers disabled by injury or disease and settlement of workers suffering from permanent disability

(f) to educate workers in the preservation of health and promotion of well-being and

(g) to promote research and investigation."

5. This comprehensive statement of the functions of an industrial health service may be accepted as the objective to be aimed at in this country, when the development of such an organization is undertaken. It will be seen that the health protection that will be offered will be largely preventive in character. At the same time, provision will be made for the emergency treatment and care of injured and sick workers at their place of work" as well as for the rehabilitation of those whose working capacity has been affected by injury or disease. The education of the worker in the preservation of his own health with particular reference to the hazards of his occupation, is an essential function of this health service, while the promotion of

research and investigation into occupational health problems is fundamental to the proper functioning of the organization and to a progressive expansion of its activities.

6. We may, with advantage, describe briefly the proposals of the. Committee for the industrial health service that has been recommended by it for England. As regards its organization, the Report recommends that "the industrial health service should be an integral part of the proposed National Health Service and should be administered centrally by the Ministry of Health. Certain administrative and executive functions will, no doubt, require to be delegated to the Ministry of Labor and National Service and other bodies in order to maintain contact with the lay inspectorate, but it would be desirable for the Chief Medical Officer of the Ministry of Health to hold the same position in this regard in the industrial health service as he does in relation to the Ministry of Education."

7. It may be explained here that, while the Minister of Health is in England responsible for the health of school children, he has appropriated to himself only the power of determining standards and has transferred to the Ministry of Education the administration of the school health service. At the same time, in order to ensure coordination between this organization and the general health service, the Chief Medical Officer of the Ministry of Health has been made ex-officio the Chief Medical Officer of the Ministry of Education.

8. The work of the industrial organization should be integrated with the work of the general health services in each local area under the national health scheme, "including those provided by the general practitioners, the hospitals and any specialized units which are available for the treatment of occupational diseases and research and teaching in this subject." A brief reference to this National Health Service in Great Britain has been made in the chapter dealing with modern trends.

9. The industrial health service will consist of medical and nonmedical personnel. The former will include a medical inspectorate associated with central and regional administration, consultants in industrial medicine with "in-patient facilities at selected hospitals with beds under the charge of the consultants", whole-time industrial medical officers serving one industrial establishment or a group of them under one firm or a group of firms and part-time industrial medical officers, who will be general practitioners with special training in industrial medicine. The non-medical personnel will include industrial nurses, social workers, welfare workers and certain technical specialists.

10. The report emphasizes the importance of establishing Departments of Industrial Health in the teaching medical institutions of the universities. They "should be charged with fundamental research, including field investigation, especially in relation to problems of their own region." These University Departments of Industrial Health will also play an important part in the training of industrial medical personnel, including consultants and specialists in industrial medicine.

11. It will be seen that the aims of the industrial health service in that country as suggested by the Committee of the Royal College of Physicians do not include the provision of general medical aid to the industrial population. That function will be performed by the national health service with which the industrial health organization

will be integrated. The objects to be achieved through the latter are, in the words of the report, "the promotion of the general health of the worker by the provision of optimum environmental conditions And by fitting the worker into such conditions; the prevention of disease and accidents in industry; the taking of an appropriate share in the rehabilitation of the disabled workmen; and the education of the workers in the preservation of health and promotion of well-feeing."

12. These proposals of the Social and Preventive Medicine Committee of the Royal College of Physicians provide useful suggestions for the organization of an efficient industrial health service in India. Such a service must obviously be complementary to a well-developed general health service for the community as a whole because, as has already been pointed out, the worker, in addition to the protection he requires against the hazards to health that arise out of his occupation, must be cared for as a member of the general population among whom he lives for the greater part of each day of his life. As has been proposed for England by the Government of that country, we have recommended, in this report, the development of a comprehensive health service which will provide a reasonable measure of curative and preventive care to all sections of the population in India. It is essential that our proposals for an industrial health service should fit in with this scheme of general health protection for the community. The adoption by us of the aims and structure of the industrial health organization, as set out by the Committee of the Royal College of Physicians, seems, therefore, to be appropriate. The creation of centers of teaching and research in industrial health in the medical colleges attached to the universities will be necessary before such an organization can be developed to any considerable extent in India. Further, the hospitals and the consultant and laboratory services that our general health service will provide will also be necessary for the proper functioning of the proposed industrial health organization.

This does not mean that a beginning should not be made at once with such facilities as may be available.

13. In our recommendations for the development of the future health programme, we have accepted the present position whereby the main health functions for the community are the responsibility of Provincial Governments. We, therefore, suggest that the industrial health organization should form an integral part of the Provincial Health Department and that it should work in close association with the Provincial general health service. We may state here that we arrived at this decision independently and before we had the opportunity of becoming acquainted with the recommendation of the Committee of the Royal College of Physicians in this behalf.

14. The proposed industrial health service will not minister to the general medical needs of the industrial population. This function will have to be performed by the health service for the community as a whole. The latter is as yet in an undeveloped stage in the country and the implementation of our proposals, which will provide a reasonably satisfactory service, can be carried out only through- a period of years and in stages. The view is held by some of us that the need for providing medical relief to the industrial population, on a higher scale than is at present available, is urgent. The industrial worker is generally a migrant from rural areas and lives and works

in a more congested and unhealthy environment than that to which he had been accustomed. He often lives separately from his family and exposed to the temptations that urban conditions provide. These facts, coupled with the share that he contributes to the wealth of the nation through the promotion of industrial development seem to lend some justification for asking that the State should contribute from the public funds towards the provision of special facilities for the medical relief of the industrial population, even in advance of the development of the general health programme. We gave full consideration to this question when we laid down, in the chapter dealing with modern trends, certain principles that should govern the development of health services. These are (1) that public funds should, as far as they are available, be devoted to the development of the health service which we have recommended for the community as a whole and not to the creation of special facilities for certain specific sections of the population; (2) that the cost of the latter services, if they are to be developed, should, until such time as they are absorbed in the general health services, be met by the communities or groups which will be benefited by such services and (3) that the general health service should minister to the needs of the people without payment of fees.

15. These principles should not, however, be held to preclude Governments from applying in advance any portion of the programme suggested by us, to certain areas or to particular groups of the population, if they consider this essential in the general interest. We realize that our programme cannot be carried out on all fronts simultaneously to exactly the same extent and that, therefore, advanced applications of parts of it may be necessitated by special considerations.

16. One of us (Mr. N. M. Joshi) desires to supplement the view expressed above by suggesting that Governments should not be precluded from making financial contributions to any scheme for industrial workers when undertaken by a statutory body. We quote his words, "I hold that, in case the Governments, while accepting the need for applying in advance any portion of the programme suggested by the Committee to any particular group of the population such as industrial workers, are not in a position actually to apply it in advance to that group, the Governments will not be considered to be precluded from making financial contributions to any scheme undertaken by any statutory body."

17. We have already recommended that the general health service for the community should be given to all free of charge. Should the proposed industrial health service be offered on the same basis or on payment? In reaching a decision on this point it should be remembered that the health protection that will be offered will be largely preventive in character, although provision for treatment and rehabilitation will also be made in order to meet situations in which prevention fails. In these circumstances it seems doubtful whether the worker can reasonably be charged for such services. It is for consideration whether the employer should not be made to contribute towards the service. It is undoubtedly in his interests to keep down absenteeism through sickness to the lowest possible level and to improve the general health and productive capacity of the workers. The demand for a contribution from the employer towards the proposed industrial health service does not seem unreasonable. We, therefore,

suggest that the employer and government should together be responsible for meeting the cost of the proposed industrial health service and that the worker should be exempt from being made to pay for it.

18. We understand that the creation of a central health insurance fund, which will be raised by contributions from Government, employers and workers and will be utilized for the benefit of the workers, is under contemplation. If the proposed central fund comes into existence it should be possible, by grants from it, to promote the development of an even higher level of general health service for industrial workers than that envisaged under our short term scheme for the community. Further grants from this fund, if available, could be utilized for establishing an industrial health organization on the lines indicated in this chapter, thus providing the two types of complementary health services which the worker requires.

19. It may be asked whether the financing of this service from the central fund will not constitute a compulsory contribution from the workers towards the industrial health organization. It will be so to a limited extent. We presume that the major proportion of their contribution will, however, go back to them as cash benefit during periods of sickness. In the early stages of development the financing of the industrial health service by the Central fund appears to us to afford a practical method of ensuring that the organization is brought into existence. As a long term measure we envisage that the State will bear, in the first instance, the whole cost of the scheme and then recover from employers such proportion of it as may be laid down by law.

Certain other Recommendations for Early Action

20. While these proposals for an industrial health service will obviously take time to materialize, we desire to put forward certain recommendations for early consideration and appropriate action by Governments. These recommendations are based on our study of the industrial health problem through visits to industrial establishments in different parts of the country and through interviews with employers, workers, Government officials concerned with industrial welfare and private individuals who are interested in the problem.

Training in First-aid

(1) All employers should encourage the organization of first-aid, training in their institutions. It is suggested that at least four persons out of every 150 workers should be trained in first-aid according to the standards laid down by the St. John Ambulance Association.

Creches

(2) (a) In industrial undertakings employing more than 50 women a statutory obligation should be laid upon the employer

(i) to provide suitable crèches for the children's of women workers under the supervision of trained family attendants, with adequate provision for washing and changing of clothes;

(ii) to supply free milk to the children and

(iii) to provide facilities for the women workers to feed their babies when necessary while on duty,

(b) In industries employing less than 50 women the obligation to provide crèches, where their children can be cared for while their

mothers are at work, should be placed upon the local authority which is responsible for the health administration of that area. Such crèches should be located in central places which are convenient for a number of industrial establishments.

Maternity Benefits

(3) Maternity benefits should be granted to women workers in accordance with the recommendations of the International Labor Convention No. *3* of 1919 which recommends that women should be forbidden to work during a period of 6 weeks following their confinement, and that before confinement they should have the right to leave work and receive maternity benefits on the presentation of a medical certificate showing that they are likely to be confined in six weeks' time. During these periods she should be paid her full wages because it is just at this time she requires nourishing food and special treatment. The payment of full wages, moreover, is justified in India where the prevailing wages of |women workers are, generally speaking, very low.

Employment of Women in Coal Mines

(4) We are unanimously agreed that, from the point of view of health, it is undesirable that women should be employed under ground in coal mines.

Hours of Work

(5) (a) We are of the opinion that purely from the point of view of health of the workers, the maximum hours of work prescribed in the Factories and other Acts are too long and should be reduced. In view of the climatic conditions of the country, the frequent difficulties of transport to and from the worker's home, his poor physique and nutritional deficiencies, the necessity for a mid-day rest and his general social and economic environment, we recommend that the maximum should be reduced to 45 hours a week, *i.e.,* 8 hours a day for *5* days, and 5 hours a day for or day, and that the Factories and other Acts be amended accordingly,

(b) In the case of seasonal factories, which may be obliged to work under considerable pressure during only a part of the year, this maximum may be increased after taking into account such relevant factors as the extent of hazard to health that the occupation involves and the distance that the workers have to walk back to their homes.

(c) We recommend an interval for the mid-day meal of not less than one hour, exclusive of working hours.

(d) We recommend that the maximum period during which workers are continuously on night duty should be limited by statute to a fortnight.

Accidents

(6) (a) Compensation in respect of accidents should be payable to all notifiable accident cases from the first day of disablement and the seven days' waiting period should be abolished.

(b) We were struck by the fact there were no centers in industrial areas for the purpose of rehabilitating and retraining workers, who are unable to take up their original employment as the result of accidents. Provision should be made for the proper treatment and rehabilitation of injured persons so that they may recover and get back to work

as early as possible. There should also be provision for the supply of artificial limbs and eyes.

Adequate facilities for the treatment and rehabilitation of workers will become available only when the proposed industrial health service becomes established in addition to the general health service recommended by us, and we therefore stress the need for organizing both these services in the larger industrial centers with the least possible delay.

(c) Another point to which we would draw attention is the unsatisfactory state of registers of sickness and injury among employees, particularly in the smaller industrial establishments. We recommend that proper registers of sickness and injury should be maintained in every industrial establishment in accordance with the standards prescribed by Provincial Governments.

Occupational Diseases

(7) (a) There should be an enquiry by the Government of India as early as possible into the prevalence of occupational diseases in the country. As there are so few medical officers trained and experienced in this subject, we recommend that a number of them be sent abroad for further study in industrial hygiene and occupational diseases.

(b) On the completion of the enquiry referred to above an exhaustive list of occupational diseases in India should be prepared and all such diseases should be made notifiable by Statute.

(c) Departments of Industrial Medicine, the functions of which will include, among others, the study of occupational disease and industrial research, should be established in teaching medical institutions and we suggest that a start should be made at the All-India Institute of Hygiene and Public Health.

Women Doctors

(8) An adequate number of women doctors should be employed in the proposed industrial health service.

Housing

(9) (a) We have expressed in another chapter our opinion that the housing of the industrial population is primarily the responsibility of the Governments concerned. We have also made recommendations relating to the preparation of housing schemes for the population generally, including the industrial population, by Governments, local authorities and private enterprise. In this chapter we content our selves with recommending the following minimum standards for working class housing, which Governments should prescribe and strictly enforce. We regard these standards to be the minimum required for the health of the industrial worker and his family:—

(i) For a single man: a room 10 ft. x 12 ft. x 10 ft. and a verandah 8 ft. x8 ft x 10 ft. For a group of such quarters there should be provided community kitchens, latrines and bathing places in accordance with the standards to be prescribed by the Provincial Government. Where common kitchens are not provided, provision should be made for *choolas* on the verandahs with suitable chimneys for the outlet of smoke. Where latrines and bathing places for common use are

erected, they should be at a reasonable distance from the quarters and, if possible, connected by a covered way for protection during bad: weather.

(ii) For a family: for a married couple, two rooms 10 ft. xl2 ft. x 10 ft. with a verandah, kitchen, bathroom and latrine. For a family including grown up children the accommodation should be increased by at least one extra room of similar size.

(b) In regard to sanitary conveniences, we suggest that, as far as possible, septic tank and soil distribution systems should be introduced so that the handling of night-soil may be avoided.

Food of the Workers

(10) (1) *Nutrition.*—(a) In our opinion no effective improvement in nutrition is possible unless purchasing power is increased. How this should be done is a question which does not properly come within our terms of reference but we consider it our duty to draw attention to this important matter.

(b) We recommend that systematic nutrition surveys should be undertaken by Provincial Governments in various industrial centers for the purpose of estimating existing levels of nutrition among the industrial classes. We have recommended, in Chapter V, that each Provincial Government should maintain a nutrition organization as part of its Health Department. It should be one of the duties of this organization to carry out the surveys suggested above, to formulate balanced diets to meet the energy and other requirements of different types of workers and to assist in the carrying out of educative work in nutrition among employers and employees

(c) It should be compulsory, in the first instance, for industrial establishments employing a certain minimum number of workers to maintain canteens. These canteens should provide for workers suitable balanced diets at reasonable cost

We recognize that the daily energy requirements of individual workers will vary with the amount of physical effort that they may be called upon to put forth. We recommend, however, that, when providing for balanced diets to workers, 3,000 calories daily may be adopted as the energy requirement of the average manual worker engaged in industry.

(d) Employers should encourage workers to observe regular meal hours. Rules regarding night shifts should be so framed as *to* allow workers to get adequate time for proper meals.

(e) Municipal bye-laws regarding the protection of food require strengthening and stricter enforcement. In order to secure-adequate supervision there should be a sufficient staff of well-trained and well-paid sanitary inspectors under the control of the health authorities, who should have free access to the premises of any industrial establishment for ensuring cleanliness in the preparation and distribution of food.

(f) Every canteen, food shop, tea shop and kitchen in an industrial establishment should be protected against flies etc., by the provision of fly proof doors and windows.

(2) Adulteration.—there should be more stringent supervision over food supplies inside the factory areas by municipal authorities. We have recommended in chapter XXIII detailed measures, legislative and

administrative, for dealing with the problem of adulteration in respect of food for the general community, including industrial workers.

(3) *Hawkers.*—as far as possible hawkers should not be permitted. With in factory premises but, where canteens have not been provided, hawkers, when permitted inside a factory, should be licensed by the public health authority and the food offered for sale by them should, be subject to examination and inspection by that authority.

(4) *Milk.*—in view of the importance of milk in the diet of the: people we have recommended in the chapter on nutrition that special measures should be taken by Governments and local bodies, to ensure an adequate supply of this article of food to the community at prices within their reach. These measures will benefit industrial workers also. In addition we recommend that local authorities should, with the co-operation of employers and employees, promote the development of co-operative dairy farms or arrange for the supply of milk in other ways in order to improve the standard of milk consumption by workers.

The Zoning and Location of Industry

(11) (a) Town and Rural Planning Acts should be passed by Provincial Legislatures setting up in each province a separate Ministry of Housing and Town and Rural Planning, with wide powers to deal with the housing of the industrial population and with the zoning and location of industry.

(b) Before the establishment of any new industry or factory is agreed to by the Provincial Government, the Minister should satisfy himself that, in the lay-out, adequate provision is made for the housing of workers, for their transport to and from the factory and for adequate environmental amenities.

(c) We wish strongly to reiterate the recommendation of the Royal Commission on Labor that Provincial Governments should take-steps to prevent industries being established in places where there will not be sufficient room for adequate housing or other necessities such as water supply, electric power, etc. This should be the function of the Ministry of Housing and Town and Rural Planning if established, and, under the appropriate legislation, rules should be framed to regulate the growth of industries from this point of view.

(d) We commend for serious consideration the suggestion that, where possible, having regard of course to the relevant economic factors, new industries should be dispersed in rural areas so that the local inhabitants may derive the fullest benefit from industries being brought within their immediate circle. The present system of establishing factories near or in big towns, where the workers are forced to-live in crowded tenements and under artificial and insanitary conditions as parts of a huge machine, is harmful alike to the town dwellers; and the workers themselves. The health problem of workers in such industries would be greatly simplified if industrial establishments could be located in rural surroundings.

Drink and Drug Habits

(12) (a) There should be stricter control over the licensing and location of liquor shops in industrial areas, the hours of opening, and closing, the quality of drinks sold and, in particular, the standard of cleanliness maintained in these shops.

(b) The aim should be to make places, where alcoholic beverages me permitted to be sold, decent establishments where a high standard of cleanliness is maintained and suitable refreshments are provided, so that a man can take his family and order food along with drinks. The experience in the West is that, under such conditions, the excessive consumption of alcohol is generally checked.

(c) The hours of sale of alcoholic drinks should be reduced.

(d) There should be strict control over the sale of opium, *'ganja', 'charas'* and *'bhang',* in order to reduce their consumption by the industrial population as much as possible.

(e) The majority of us feel that the opening of new liquor shops *in* industrial areas should not be permitted. The others, while considering this to be too drastic a step, support the strictest possible restriction in the opening of new shops in such areas.

(f) In order to promote the consumption of non-alcoholic beverages we. Suggest that local authorities should afford all facilities for the opening of milk bars, tea and coffee shops in industrial areas.

Transport

(13) In view of the utmost importance of the provision of cheap transport facilities for workers to and from their homes, we recommend that Provincial Governments and local bodies, with the co-operation of private enterprise, employers and co-operative organisations should take immediate steps to ensure the provision of such facilities.

Industrial Hygiene and Conveniences for Workers

(14) All rules regarding industrial hygiene within factories, mines and other industrial establishments, such as those pertaining to ventilation, control of humidity, cooling, smoke nuisance, dust, water supply, provision of urinals and latrines, bathing arrangements, drainage, disposal of sewage and mosquito control should be re examined and brought up-to-date by the Governments concerned. Steps should be taken to ensure their stricter enforcement.

The following suggestions are offered in respect of certain specific matters:

(i) *Control of humidity and temperature.*—The rules relating to the control of humidity and temperature in factories should be reexamined in consultation with the Provincial Health Department and steps should be taken to ensure that they are more rigidly followed.

(ii) *Air-conditioning.*—Under certain climatic conditions air-conditioning of industrial establishments is calculated to improve the health conditions and to promote a larger out-turn of work. We therefore recommend that, wherever possible, employers should be encouraged to install air-conditioning plants.

(iii) *Protection against the inhalation of gas, dust or other impurities.*—Under section 14 of the Factories Act provision exists for requiring that, in any factory in which gas, dust or other impurity is generated, adequate measures shall be taken to prevent injury to the health of the workers. The same section also empowers Provincial Governments to make rules in this behalf. Where such rules have

not yet been issued, we recommend that Provincial Governments should frame and enforce them without delay. Existing provision relating to such measures should be more strictly enforced. Whether the factory be large or small, the provision and maintenance of mechanical or other devices for preventing the generation or inhalation of gas, dust or other impurities injurious to the health of workers are essential. In any event, in the smaller factories, masks should be provided for workers and. they should be made to understand the evil effects of inhaling gas, dust or other impurities. Instructions in the use of such devices should be given.

(iv) *Smoke nuisance.*—In some Provinces, there is at present legislation relating to smoke nuisance, but its enforcement is not often effective. We recommend that the Government of India should institute an investigation into the dangers of smoke nuisance in industrial and other areas and that swift action should be taken on the recommendations arising out of such an investigation.

(v) *Washing facilities.*—There should be provision, in every industrial establishment, of washing facilities for all workers and, in the case of workers handling or coming into contact with obnoxious-substances, there should be a free supply of soap or some other cleansing material.

(vi) *Drinking water.*—It should be made obligatory on employers to supply, free of charge, an adequate supply of cool drinking water in accordance with the rules framed and standards laid down by Provincial Governments.

(vii) *Bathing arrangements.*—Employers should provide, in the premises of industrial concerns, an adequate number of taps or showers for bathing after the operatives have finished their day's work. In certain cases it may be necessary to provide washing facilities and clean overalls before an operative begins his work, for instance, in establishments dealing with the preparation of food.

(viii) *Urinals and latrines.*—The number of urinals and latrines provided in industrial establishments, including plantations, should be in accordance with standards laid down either by statute or by health authorities. In places where municipal administration or *&* water borne system does not exist, employers should be made to adopt such methods of disposal of night-soil as are recommended by the local health authorities with. a view to ensure that its unsatisfactory disposal does not create a danger to the health of the community. We should again draw attention to our remarks in this connection under sub-paragraph (b) of Para. 9 of our recommendations-dealing with housing.

(ix) *Cloak room.*—We consider it desirable that, in every industrial establishment, employers should provide a place where workers should be able to keep their clean clothes in safe custody, before they enter the works premises in their working clothes.

(x) *Special clothing.*—Special clothing in all cases where the worker has to come in contact with obnoxious or injurious substances or substances likely to soil the clothing should be provided by the employers free of cost.

(xi) *Protective equipment.*—Gloves, goggles and such other protective equipment as may be necessary according to the industry in which the workers are employed should be provided by the employers free of cost and their use by the workers enforced.

(xii) Seats should be provided, wherever practicable, for workers at their work.

Rest Shelters

(15) It should be made obligatory for every industrial establishment employing 100 persons to provide rest shelters and dining halls of approved types. Suitable furniture should also be provided in these shelters and dining halls. The standards for these, including furniture, should be laid down by rules framed by Provincial Governments. There should be separate provision for men and women. The walls and roofs of the rest shelters and dining halls should be made of non-conductive material, which would give adequate protection against heat, cold and rain.

Certification of Adolescent Workers

(16) The requirements of the existing legislation regarding the employing of adolescents should be so modified us to qualify general practitioners approved by Provincial Governments to function as certifying surgeons. They will certify as to the general fitness of the adolescent for industrial employment.

When the industrial health service which we have recommended develops, it should be possible to provide for the examination of all workers with a view to placing them in departments in which they are best fitted to work.

Pre-employment Medical Examination of Adult Employees

(17) As soon as the proposed occupational health service becomes fully developed all industrial establishments should institute a system of pre-employment medical examination of adult employees, including the clerical office staff. The examination should be of a thorough nature and the object to be aimed at should be to follow up the initial test by periodical examinations, at least once in three years. These examinations should be followed, where indicated, by suitable treatment and advice regarding the rectification of unhealthy modes of life.

Employment of Children in Industrial Establishments, Plantations etc.

(18) (a) The minimum age for employment in industrial establishments, docks etc., should be raised to 15 and persons between 15 and 17 should be eligible for employment as adolescents on the certificate of the certifying surgeon.

(b) The minimum age for the employment of children on plantations and public works should be 13.

(c) In course of time when the compulsory school leaving age is raised and adequate educational facilities become available, employment of children under 15 should be abolished for all types of industrial establishments and occupations.

Inspectorates of Industrial Establishments

(19) (a) The provincial factory inspectorates require strengthening and their status enhancing. The inspectorate should be sufficiently numerous to enable each industrial establishment in the Provinces to be inspected at least twice a year.

(b) The inspectorate should be divided into the following three divisions, each being staffed with persons possessing special technical qualifications: —

(i) Engineering, with special knowledge of safety laws;

(ii) Public health and

(iii) Social service or labor welfare work.

(c) The post of Chief Inspector is of sufficient importance and responsibility to attract men of high qualifications. He should be assisted by Regional Directors. The minimum general education for an inspector should be the intermediate in science of an Indian University or its equivalent. He should also possess some technical knowledge of factory practice and legislation and should undergo a short course in public health.

(d) The number of women factory inspectors should be substantially increased.

Unregulated Factories and Workshops

(20) The need for regulating the conditions of employment in a number of establishments or trades, to which the Factories Act does not apply or has not been applied, even when legal provision exists for such enforcement, is urgent. In our review of unregulated places of work earlier in this report, we have drawn attention to specific instances, which came to our notice during our tours, of establishments and trades in which the working conditions provided for the employees are, from the point of view of their health, of an extremely unsatisfactory nature. They include, among others, tanneries, *bidi* factories, the glass bangle industry and the building trade. Measures taken to regulate them should include the issue of a license by a competent authority before the industry or trade can be started, the license laying down specific conditions regarding the nature of the premises, ventilation, lighting, washing facilities, sanitary conveniences, hours of work and other matters which are necessary for ensuring comfort and protection against danger to health to all those who are employed.

There are obvious difficulties in the way of exercising efficient control over such establishments. Some are due to the fact that they are located in rural areas where supervision and control are not easy, and some to the fact that they are small, employ but few workers and are situated in congested areas from which they cannot readily be transferred. Many of these industries have existed for many years and fulfil a useful place in the economy of the country. Their workers have family traditions behind them and appear to be content with the conditions of their employment. The inspection of all these establishments will not be an easy matter for provincial governments, particularly as it should be so exercised as not to inflict undue harassment or hardship. At the same time we must point out that the working conditions in these establishments require radical improvement from the point of view of the health of the worker and of the locality, and that stricter inspection and control are essential.

We have already recommended that the occupational health service suggested in this chapter should, when fully developed, bring within its scope all forms of employment outside the home. When.

this stage is reached all the occupations discussed in the preceding paragraph will have been brought under adequate control from the point of view of safeguarding the health of the workers. We would urge that a beginning should now be made to regulate and control the working conditions in the types of establishments described above. As has already been pointed out, it will be necessary to prescribe a minimum number of employees to bring such establishments within the law. This number will, no doubt, have to be determined by various considerations depending on local conditions and we must therefore leave the decision, in each case, to individual Provincial Governments. But we cannot urge too strongly the need for early investigation and appropriate action to bring such establishments under effective supervision.

CHAPTER XI

HEALTH SERVICES FOR CERTAIN IMPORTANT DISEASES

1. In this chapter we shall deal with the special measures *we* consider necessary in respect of the following diseases: —

1. Malaria.
2. Tuberculosis.
3. Smallpox.
4. Cholera.
5. Plague.
6. Leprosy.
7. Venereal diseases.
8. Hookworm.
9. Filariasis.
10. Guinea-worm.
11. Cancer.
12. Mental diseases and mental Defiency
13. Diseases of the eye and blindness.

The majority of these diseases are communicable and we shall begin with a brief review of the existing provision, legal and administrative, for dealing with such diseases.

A Brief Review of the Existing Provision, legal and administrative for dealing with Communicable Diseases

2. *Introduction.*—Herbert Spencer said long ago that perfect correspondence with environment would be perfect life. A healthy life depends on man's continuous adjustment to his environment. The vicissitudes of climate, his house, his workshop, the food he eats, the social life around him—all these form part of the environment which continually reacts on him and they determine, each in its own measure, his state of health or disease. This environment includes the many forms of life, animal and vegetable that exists on the earth and, from time immemorial man and other living beings have been in conflict with one another in a continuous struggle for existence. From the point of view of undermining the state of his physical health and well-being a whole host of parasitic organisms, which gain entry into his body in various ways, have played an important role through the ages. "While all forms of disease can be defined as departures from the harmonious functioning of the body owing to man's failure to adjust him to the environment, the large group of illnesses resulting from parasitic invasion must be looked upon as a struggle for existence between man and the parasites which gain entry into his body. He fights the invader with all the powers with which he is endowed and, if he succeeds, he recovers from the disease and, in many forms of illness the protective forces he has developed during the struggle continue to afford him sufficient strength to ward off an attack by the same organism for a long time afterwards. In other cases, the immunity conferred on him is of a transient nature. On the other-hand, if the organism is able to overcome the resistance of the patient, the disease takes a grave turn and the man eventually dies. There is yet another outcome of the struggle on certain occasions. The man and the parasite establish a form of armed neutrality between themselves. The man outwardly re-establishes his health but the parasite has not been completely destroyed, as it has secured for itself a foothold somewhere in the man's body and continues to

live there. Thus is produced the carrier state as in the case of a small percentage of typhoid patients. When favorable conditions prevail the organism multiplies quickly and is excreted in the urine or faces of the patient who, apart from the ill-effects on himself, thus becomes a potential source of infection to his fellow man.

MEASURES FOR CONTROLLING COMMUNICABLE DISEASES

3. From this brief description of the genesis of disease it will be seen that the measures required for combating it fall into two broad groups, namely, (1) those which are concerned with an improvement of the environment in a wide sense of the term and (2) those which are specific for individual diseases. The former group includes the elimination of such factors promoting the spread of disease as the unhygienic home and its surroundings, overcrowding and unwholesome food and drink. As regards food qualitative and quantitative deficiency can both be responsible for ill-health, as apart from -specific types of infection which may be conveyed through its ingestion. The second group of measures consists of those which are necessary for promoting the development of special protection in the individual against particular diseases and for blocking the channels through which infection spreads, including unhygienic habits such as spitting. Control of the spread of infection is usually effected by such steps as the isolation and treatment of patients, who, in the majority of cases, become non-infective when cured, the enforcement of suitable measures against carriers disinfection of infective material and the employment of adequate measures to eliminate, as far as possible, the vectors responsible for the transmission of individual diseases.

4. Broadly speaking, the law relating to the control of epidemic diseases is contained mainly in the different local Self-government Acts applicable to municipal and non-municipal areas in the provinces and in an all-India enactment, the Epidemic Diseases Act, 1897. The latter gives emergency powers to the different Governments, Central and Provincial, in their respective areas of administration, to promulgate temporary regulations to deal with an outbreak or a threatened outbreak of infectious disease. The Epidemic Diseases Act is meant to provide additional powers to health authorities over and above those which they possess under other legislative measures Emergency regulations under the Epidemic Diseases Act have been generally issued by Provincial Governments during widespread outbreaks of epidemics or in connection with festivals which attract large numbers of pilgrims and are, therefore, associated with the threat of outbreak of these diseases.

5. The general administrative procedure in dealing with the control of infectious disease is briefly discussed below. As has already been pointed out, the matters discussed in the succeeding paragraphs may have been dealt with elsewhere in the report but, for the sake of convenience, they are again referred to here.

Notification

6. The three epidemic diseases of cholera, small-pox and plague are notifiable throughout the country. The people are generally familiar with the manifestations of these diseases and, though no

completeness of notification can be claimed, it is safe to assume that the numbers recorded from year to year give a fairly correct picture of the extent and intensity of their prevalence. As regards the other diseases a varying number of these are compulsorily notifiable in different provinces. The numbers recorded can, however, be hardly considered as being indicative of the true extent of -their prevalence. The number of diseases notifiable in municipalities is greater than in rural areas. In the former the Municipal Acts -generally make the householder responsible for reporting cases of notifiable diseases to the health authority. Medical practitioners, including Vaids and Hakims, are required to notify such cases as come to their knowledge during the discharge of their professional duties. in rural areas such provisions do not exist, the village officials being responsible for the reporting of cases of infectious disease.

7. The procedure for the transmission of information varies in the different provinces. For instance, in Bihar when an epidemic breaks out, the village watchman *(chowkidar)* reports the matter to the officer in charge of the nearest police station, who in his turn reports to the Civil Surgeon, the Health Officer, and the District Board Chairman and to the nearest dispensary doctor and Health Inspector. The Director of Public Health and the Assistant Director of Public Health receive the information from the Civil Surgeon. In this province, the village *chowkidar* attends the police station once a week. Therefore, the delay that takes place in the transmission of information regarding an outbreak of cholera, for instance, from the affected village to the nearest health inspector and dispensary doctor may extend per

haps to eight or nine days. On the other hand, in Madras the -village headman, who is responsible for reporting epidemic diseases, sends simultaneously two copies of his report to the Tahsildar and to the Health Inspector of the area in order to enable the latter to start preventive measures as soon as possible. The Tahsildar sends daily a report to the Director of Public Health, the District Health Officer and certain other specified officers in the district. It will thus be seen that the period elapsing between the outbreak of an infectious disease and its notification to a responsible public health official varies among the provinces.

Preventive Measures

8. (a) *Health staff*.—During the past quarter of a century rural and urban public health staffs have been appointed, in varying strengths, in the different provinces and the organization of campaigns against the common infectious diseases has been one of the most important of their tasks. There has, however, been no striking change in the prevalence of these diseases. The reason is not far to seek. Even in those provinces in which the public health organization has been best developed, *e.g.,* the provinces of Madras and the United Provinces, the strength of the staff available is quite inadequate for the large territories and populations entrusted to them. In the Province of Madras, for a district with an average area of 5,256" square miles and an average population of over two millions, the staff consists of one District Health Officer and, in addition, of one Assistant District Health Officer in most districts, with a Health Inspector in each taluk. The average area and population of a taluk are 540 square miles and 209,289 (1941 census) respectively. When it is remembered that the Health Inspector is required to perform a variety of health functions in the area, the inadequacy of the skeleton staff provided

even in a province where the best developed organization exists, becomes apparent.

(b) *Inadequacy of existing legal and administrative provision for dealing with large scale epidemics.*—Public health administration is a function of local bodies, urban and rural. Statutorily, each is independent of the others and, for financial and various other reasons, the level of administration, including the carrying out of health functions, of local authorities is definitely low- Another noticeable fact is the general absence of legal sanction to enforce certain standards of performance by these authorities and to co-ordinate their efforts, which is of particular importance in the field of infectious disease control. The province of Madras is an exception. We have indicated in Chapter XVII that, in this province, the local health officers possess adequate powers to act promptly either in the presence of any notifiable disease or in anticipation of an outbreak of it, that the Director of Public Health has also been given sufficient powers to enable him to compel an unwilling local body to carry out such measures as he may deem necessary to meet the situation as well as to concentrate, in the area concerned, public health staff* belonging both to the provincial service and to the services of other local bodies.

(c) *Protective vaccination against the common infectious diseases:—*

Vaccination against smallpox has been practiced in the country forever a hundred years and, although some reduction has been made in the incidence of the disease, its prevalence continues to be high. Many factors are responsible for this result and the question of smallpox vaccination will be discussed in greater detail in the section dealing with this disease.

Among other forms of vaccination, anti-cholera inoculation is the one protective measure which has been used extensively in the country. It has steadily gained in popularity during the past ten or fifteen years and is now generally accepted by the people without opposition. This subject will be discussed in greater detail in the section dealing with cholera.

(d) *Segregation of patients.—The* conditions existing in the vast majority of Indian homes, either in urban or in rural areas, are particularly favorable to the spread of infection and the need for the provision of facilities for segregation elsewhere, is therefore, great. It must, however, be remembered that, during times of epidemics, the number of patients requiring isolation, in respect of such diseases as cholera and smallpox, is considerable and well beyond the capacity of the local authorities concerned. In regard to tuberculosis and leprosy the prolonged period of isolation that is required and the possibility of a relapse into the infective stage when the patient returns to active life necessitate, for the control of these diseases, much more elaborate measures than those required for the common epidemic diseases. In these circumstances, the practice of isolation in respect of any of these diseases is, broadly speaking, hardly prevalent in the country as a whole- Another disquieting feature of the situation is that, in the cities and larger towns, where infectious diseases hospitals are maintained, their condition from the point of view of buildings, staff and equipment is, generally speaking, very

unsatisfactory. During our tours in the provinces, the following infectious diseases hospitals were visited: —

Madras—

1. Infectious diseases hospital, Tondiarpet, Madras City.
2. Infectious diseases hospital, Ootacamund.
3. Infectious diseases hospital. Coimbatore.

United Provinces—

4. Infectious diseases hospital, Allahabad.
5. Infectious diseases hospital, Lucknow.
6. Infectious diseases hospital, Agra.

Bengal—

7. Infectious diseases section of the Campbell Hospital, Calcutta.

Sind—

8. Infectious diseases hospital, Karachi.

Bihar—

9. Infectious diseases hospital, Gaya.
10. Infectious diseases ward in the General Hospital Patna.

Orissa—

11. Cholera Hospital, Puri.

The working of most of these hospitals is quite unsatisfactory. The buildings are not suitable, the staff is inadequate and the equipment is poor. Laboratory facilities are generally insufficient. In some cases, e.g., the United Provinces, the medical officer in charge is required to perform other duties as well, such as analysis of the local water-supply and anti-rabic treatment.

Rectification of the above-mentioned defects

9. *The areas in which our scheme will operate.*—We recognize that there can be no easy or rapid process of remedying effectively the defects outlined above. Our proposals for a comprehensive health service offering preventive and curative medical care to all, irrespective of their ability to pay for the service constitute in our view the only solution to the problem. Even before such a service becomes established, our short-term proposals will help to start a promising attack on the control of the common epidemic and endemic diseases. If our recommendations in the chapter on vital statistics are carried out, a reasonable approach to completeness of registration is likely to be secured as well as a speeding up of the reporting of outbreaks of epidemics to the health authority. The primary unit staff, although small, should be able to carry out intensively such preventive measures as the sterilization of water supplies and protective vaccination of the people against the disease concerned. Our proposals for protected water supply and for the satisfactory disposal of night soil in the areas under our scheme will help to decrease considerably the incidence of bowel diseases. An improvement of the environment, which is of great importance in the control of malaria, will be effected it is believed, to a steadily growing extent through the voluntary effort that is expected to be stimulated in the villages by the proposed health committees. At the same time, the small trained group of 15 inferior servants in each primary unit will help to demonstrate to the villagers effective methods of carrying out minor anti-malaria works, including the

spray killing of mosquitoes. It is in regard to the isolation of patients, where necessary, that the earlier stages of the programme will make the least provision Any approach towards adequacy in. this direction can be reached only with a large development of hospital accommodation. Even during the short-term programme a provision of 20 and 50 beds respectively has been suggested for the common infectious diseases in the secondary health centre hospitals of 200 and 500 beds recommended by us, while in respect of tuberculosis and leprosy, our proposals provide for an appreciable increase in existing hospital accommodation. It is in the countryside that facilities for isolation will be definitely slow. The small 30-bed hospitals, serving four primary units or a population of about 160,000, are likely to find themselves fully occupied with the treatment of general medical, surgical, obstetrical and gynecological patients largely to the exclusion of those who suffer from such diseases as cholera, smallpox and plague. It is, however, to be hoped that the vigorous pursuit of the requisite preventive measures will reduce the actual incidence of these diseases to a considerable extent. The provision for isolation will become adequate only when the stage of the long-term programme, with its greatly expanded hospital service, is completed. We believe that even then home isolation will have to be practiced to a large extent for a variety of ineffective conditions. We have recommended in the chapter on housing that the lowest type of house permitted to be built under the measures taken to control housing should have at least two living rooms in order to ensure the facilities necessary for isolating patients.

10. *The areas outside our scheme.*—It is not easy to put up any reasonably satisfactory proposals in regard to these areas. All the trained personnel that will become available through the implementation of our programme of professional education will, it is believed, be taken up during the first ten years and some years later.

11. The specific measures that are necessary for the control of these diseases may be considered separately. As regards notification, cur proposals for the creation of a vital statistics organization in the areas outside our scheme should help to secure a nearer approach to completeness of registration and avoidance of delay. Turning next to measures, curative and preventive, for dealing with outbreaks of such diseases we suggest that, as far as funds and trained personnel permit, provision should be made for the maintenance of two or three epidemic squads at the headquarters of each district in order that they may be rushed- without delay, to deal with such outbreaks. These squads would include medical men and staff to deal with the sterilization of water supplies, disinfection of infective material and other preventive work. They should be provided with motor vans fitted up as travelling dispensaries with all appliances and other medical requirements for remedial and preventive work. These units can also play an important part in safeguarding the health of large aggregations of population on such occasions as festivals or fairs. In normal times they can be used to provide an itinerant medical service to areas which may be insufficiently served.

12. The widespread epidemics of such diseases as cholera and malaria which sometimes occur in various parts of the country can, however, hardly be controlled by the organisations outlined above. In our view, the Army with its well-manned and equipped health services should be utilized, where possible, to meet such emergencies.

Their usefulness during the Bengal famine and the wave of epidemics that followed it has been amply demonstrated. As far as we can see, there seems to be no reason for neglecting to use a part of the Army and its medical establishment, during times of widespread epidemics, to supplement the work of the civil organization, particularly in areas where the latter is weak and unable to cope with the situation. Some of these major epidemics may constitute disasters of as great a magnitude as any war from the point of view of human suffering and mortality, and it would be unwise for the nation not to avail itself of all the means at its disposal for dealing successfully with such emergencies. The safety of the people should be our supreme consideration and no resources, Central or Provincial, should be left unused to ensure their protection and welfare.

13. We shall now put forward our recommendations for each of the diseases listed at the beginning of this chapter. In dealing with them the statistics that have been included relate generally to the period ending with 1941. The entry of Japan into the war in December of that year marked the stage at which conditions arising out of the war began to have marked adverse effect on India. In attempting to present a picture of the normal state of the public health in this country, against which our recommendations for health developments should be viewed, we have therefore considered it desirable to limit ourselves to the period ending with 1941.

1. MALARIA

Introduction

1. Malaria is by far the most important disease in India from the point of view of sickness and mortality Lieut-colonel J. A. Sin ton, a malariologist of international reputation and a former Director of the Malaria Institute of India, has estimated that at least 100 million persons suffer from the disease every year in British India, that because of its effect in lowering the vitality of its victims it is also responsible for morbidity from other causes in an additional 25 to 75 million persons annually and that, directly and indirectly, it is responsible for at least two million deaths each year.

2. It is impossible to make any complete or accurate evaluation of all the losses for which malaria is responsible. For instance, it is difficult to assess the financial loss that the country suffers as the result of decreased productivity through the incidence of the disease. Col. Sin ton has. however, estimated that, on an admittedly incomplete but conservative basis, the annual loss to the country, measured in terms of money may be anywhere between Rs. 147 crores and 187 crores per year If all the relevant factors could be taken into consideration, the loss is likely to be two or three times this estimate.

3. A tragic feature of the situation is that much of the malaria prevalent in the populated areas of the country is man-made. In many cases roads and railways have a sinister account to their credit. Their embankments often cause such interference with natural drainage as to create conditions favorable to the breeding of the malaria-carrying types of mosquitoes, while burrow-pits which follow the line of our roads and railways help to provide additional breeding grounds. Bengal is generally cited as an outstanding example of man's thoughtless interference with natural drainage resulting in the steady rise in the incidence of malaria over the greater part of that province. The failure of irrigation engineers to provide

for adequate drainage when water is brought into previously dry areas has been another fruitful cause of the spread of the disease. Recent examples of this are to be found in certain areas in Sind, the Province of Madras and Mysore. The first question with which we are faced is whether the great drain on the national health and prosperity caused by malaria is unavoidable. After the discovery by Sir Ronald Ross, towards the close of the last century, that certain types of mosquitoes are the transmitters of malaria, it has been demonstrated in limited areas in different parts of the world that the strict enforcement of anti-mosquito measures can effectively control the incidence of the disease. In the Panama Canal Zone, the first attempt to construct the Canal was frustrated by the ravages among the workmen of two mosquito-borne diseases, yellow fever and malaria. When, however, radical anti-mosquito measures were enforced in this area, these diseases were brought under complete control. The introduction of effective anti-malaria measures at Ismailia in the Suez Canal area and in Algeria was attended by equally convincing results. In this country the Raipur-Vizagapatam section of the B. N. Railway could not have been constructed, had not malaria among the labor force been kept under control by an expert malariologist, while the Mettur dam and the Sarda Canal afford other instances where large irrigation projects were successfully completed with the help of malaria control measures.

In recent years even more effective preventive measures against malaria have become available, including potent chemicals for the destruction of the mosquito and drugs for protecting man against repeated infection. The remarkable manner in which the fighting forces of the Allies operating in highly malarious tracts have been protected against this scourge during the present war again bears testimony to the possibility of effectively controlling the disease. It is clear to us that, given the determination, the money and the requisite staff, it should be possible to reduce the incidence of the disease in India to small proportions.

Anti-malaria Measures

4. The measures that are necessary against malaria fall under two main heads namely (1) those which are directed against the transmitter of infection the mosquito, and (2) those which deal with man in his twofold capacity as a victim of the disease and as a reservoir of infection. Anti-mosquito measures may be grouped under the following heads:—

(i) those which control the breeding of the mosquito and

(ii) those which are directed against the insect in its adult form.

5. *Measures to control the breeding of mosquitoes.*—These measures take a wide variety of forms, although the main principles involved are the same, *viz.,* the obliteration of facilities for the laying of eggs by the female mosquito and the creation of conditions inimical to the survival of the insect in its larval stage in circumstances when egg- laying cannot be prevented. The steps that are necessary for these purposes include, among others, drainage to prevent accumulations of water, canalization of water channels and the removal of vegetation from their sides, the use of larvicides such as mineral oils, PARIS

green and the more recent synthetic product D.D.T., selective clearing of jungle or shading of water courses in certain cases and the use of carnivorous fish.

6. There are many varieties of fish in this country which prey on mosquito larvae. *Gambusia,* an American species of minnow, was introduced into India about twenty years ago and is being used in the wells in Bangalore and Bombay, the ornamental waters in Delhi and in many other parts of the country. This species has been proved to possess all the qualities required for anti-mosquito work and is probably more suitable for this purpose than any other species. It should be emphasized however that the value of fish is very limited. They are useful in artificial collections of water like ornamental waters but their use is of doubtful value as a general anti-larval measure.

7. For dealing with the malarial conditions created by large constructional works and irrigation projects, well-planned schemes requiring considerable technical supervision and heavy expenditure will be necessary. These can obviously be undertaken and carried out only by the State. On the other hand, in many parts of the rural areas, effective results may be secured by works of a minor nature, such as the filling up of pools and ditches so as to prevent collections of water or other measures already mentioned such as oiling, removal of vegetation, etc. In our short-term programme, we have made certain suggestions for the carrying out of such measures in rural areas. We have provided for a small labor force of 15 in each primary unit, one of whose duties will be to see to the carrying out of these minor works. These men may be unable to deal effectively with the whole area covered by such a unit, but an important part of their work, will lie in their being able, as a trained group, to demonstrate to the villagers how to go about these tasks properly. We hope that the village committees we have recommended (*vide* Chapter IV) will be able to mobilize voluntary local effort in carrying out such measures and that we shall thus be able to enlist a tremendous force in the fight against this disease. The small labor squad will also form the nucleus round which, during an epidemic, an expanded organization can be rapidly built up.

8. It is desirable that the planning and execution of these anti malarial works should, as far as possible, receive technical guidance and we have recommended the appointment of an Assistant Public Health Engineer at the headquarters of each secondary unit for this purpose. Direct local supervision will be provided by the medical officer in charge of the primary unit and his two public health inspectors.

9. Although we hope that the local effort we have referred to will help to reduce the cost of labor, sufficient public funds should be made available to ensure that the required expenditure will be fully met. We have included in our budget for each primary unit a provision for meeting this expenditure.

10. *Measures against the adult mosquito.*—The Director, Malaria Institute of India, has pointed out that the results of spray-killing operations carried out in various parts of the country hold out the hope that "we have at last a weapon which, when its full possibilities have been developed, will prove effective for rural, as well as urban and industrial, malaria". Pyrethrum, the active principle extracted

from the flower of the pyre thrum plant, has been found to be an effective insecticide and has been used extensively as a spray for the killing of adult mosquitoes. The synthetic product, D.D.T., has provided an even more effective insecticide than pyre thrum. The great advantage of *D.D.T.* over pyre thrum is its residual effect, while pyre thrum is superior to D.D.T. in its immediate knock-down effect. A combination of the two products has been tried on a relatively small scale and found to give satisfactory results. The purpose of this measure is to kill infected mosquitoes and to reduce the longevity of mosquitoes in an area, so that the number which live long enough to become malaria carriers is reduced to the minimum. This measure has been developed during the last few years and is of special value where anti-larva measures may take too long to give results, or as a supplement to such measures.

These operations against the adult mosquito will be undertaken in the rural areas by the squads of 15 laborers that have been provided in each primary unit with, we hope, the active support and assistance of the villagers.

We shall deal with the subject of ensuring adequate supplies of these insecticides for the use of the health departments in India later in this chapter.

Measures in relation to Man

(a) *Man as a victim of the disease—*

11. *Treatment—* here the primary need is to ensure adequate treatment. This involves a proper diagnosis where possible and a sufficient supply of the requisite drugs. While it may not be practicable to have a microscope at every primary health centre, it should be possible to send blood-smear for examination, when necessary, tot-he nearest 30-bed hospital and obtain a diagnosis without undue-delay. During times of epidemics, however, the primary need will be for the immediate distribution of anti malarial drugs.

12. Quinine has for long been the drug of choice in the treatment of malaria. More recently, atebrin (or mepacrine as it is now being called) has also come widely into use. After an extended study of the comparative values of quinine and atebrin for the treatment of the disease, the Malaria Commission of the League of Nations cameto the conclusion in their fourth report (1937) that, while atebrin was more effective against certain species of the parasite, quinine was more potent against others. In India, under the conditions arising out of the War, many millions of tablets of mepacrine have been widely distributed among the general population for the mass treatment of malaria in view of a shortage in the supply of quinine. So far no untoward results have been definitely substantiated from this widespread use of the drug, though careful investigation in regard to the matter will no doubt have to be continued. Further, experience of the distribution of this drug to Allied fighting forces in the Tropics under conditions, which preclude any degree of control over its use by the individual- has also led to the conclusion that it can be used with safety for mass treatment. Recent investigations suggest that en even more effective synthetic product; paludrine is likely to come into use at an early date. In these circumstances, there is the possibility that synthetic products may, in due course, come to replace, to an appreciable extent, the use of quinine as the routine drug for the treatment of malaria.

13. *Other measures.*—The use of quinine and mepacrine as suppressive agents for preventing the development of malaria has been extensively tried among troops continuously exposed to infection in highly malarious areas. The consensus of opinion appears to be that quinine has but small value as a suppressive agent, the reason probably being that it is excreted quickly and does not, therefore, remain in sufficient concentration in the circulation. Mepacrine has on the other hand, a much slower rate of excretion and has been found to be more effective than quinine when used for this purpose.

The question of production of adequate quantities of quinine and of mepacrine for the needs of the country will be discussed later.

14. Equally important is the question of affording protection to a healthy person against the bite of an infected mosquito. The measures that are generally adopted include, in addition to the killing of adult mosquitoes, the use of mosquito repellents on exposed parts of the body and of mosquito nets and mosquito coils with pyre thrum as the base as well as the screening of houses so as to prevent the entry of the insect. These are all undoubtedly useful but, as measures for the general population in malarious places, they seem to be of limited practical application.

15. (b) *Man as a reservoir of infection.*—The life of the parasite is passed partly in man and partly in the mosquito. In man it exists in two forms, namely, one which undergoes the asexual type of reproduction during which the malarial attack is produced and the other, the male and female sexual elements, which, on ingestion by the mosquito, unite and by further development in that insect, give it the power of infecting man. Plasmoquine has been found to be effective in killing these sexual forms when they circulate in man's blood. In these circumstances, a course of plasmoquine treatment, following medication for curing an attack, should be advocated as tending to reduce the chance of infection being conveyed to mosquitoes.

Anti-malaria Organisations at the Centre and in the Provinces

16. In an article entitled "The public health aspect of malaria control" in the Indian Medical Gazette of December 1942, MAJOR-GENERAL G. Covell, I.M.S., Director, Malaria Institute of India, made the following observations: —

"An essential preliminary to the successful control of malaria in India is the formation of an adequately staffed permanent malaria organization in each province, the activities of which should be linked up with those of the central organization of the Government of India."

17. We fully endorse this view. One of the great defects of the anti-malaria campaign in India during the past 50 years was that it consisted of a series of spasmodic attempts to control the disease. This lack of continuity of effort, accompanied as it often was, by the employment of an organization with insufficient staff and equipment, has been largely responsible for the inadequacy of the results achieved. As we have already said, it has been amply demonstrated, during the present War, that, with adequate measures, even the highly malarious regions of the Tropics can be rendered comparatively safe from this disease. Again we have pointed out, in our review of existing conditions, how the malaria organization, which

has been working in the Delhi urban area for the past seven or eight years, has shown that, under civil conditions also, a reasonably effective control of the incidence of the disease can be achieved provided adequate funds are expended under the best available technical advice. In these circumstances, we feel that there can be no excuse for Governments in this country not attempting to organize an effective campaign against the disease. Its wide prevalence, the cost involved and the existing inadequacy of trained personnel may result in this campaign being extended over perhaps many years. Even so, it is most important that a beginning should be made and, in the following paragraphs, specific proposals are made towards this end.

18. *Central Malaria Organization.*—The Malaria Institute of India is the central organization for advising the Government of India on all matters relating to this disease as well as for assisting Provincial Governments with such technical advice as they may require. Its functions have been defined by the Director of Malaria Institute in the following terms: —

"1. To be fully informed upon all malaria problems. To advise Government on all issues relative to malaria in India.

"2. To initiate enquiries and investigations on malaria. To carry out such inquiries as Government may for any reason require. To assist provincial organisations in the carrying out of such inquiries as may be undertaken by them, providing such assistance as desired and even, in certain cases when thought necessary, to lend officers temporarily from the staff to work under local government.

"3. To undertake systematic research in due course into all the basic facts underlying malaria transmission, prevalence and prevention, such as the study of mosquitoes, systematic and binominal, types of malaria parasites, transmission power of different species of Anopheles, mechanism of infection including the study of endemic and epidemic phenomena, etc. Gradually to complete and organize knowledge on these subjects and to arrange for the making of such knowledge available for practical application, or such other uses as may be desirable.

"4. To carry out epidemiological investigations mapping of pandemic city, study of hyper endemic and healthy areas, study of malaria statistics on modern lines and generally to elucidate the underlying principles of malaria prevalence in India.

"5. To advise upon and assist in the carrying out of anti-malaria measures. To study these scientifically and to judge and elucidate their results

"6. To undertake clinical work on malaria, including treatment to study serum reactions and allied aids to diagnosis and understanding the disease to study relapse problems, effects of new drugs, etc.

"7. To assist affiliated researches (*e.g.,* kalaazar, filariasis, sand fly fever, dengue, Stegomyia work) by identification of material, provision of trained staff and subordinate personnel.

"8. To teach and train officers and others in practical malaria work.

"9. To publish scientific results useful guides, bulletins, etc.

"10. To keep alive interest in malaria study and prevention and to see that such interest wherever present is nursed and assisted."

We are in full agreement with the Director that these should be the main functions of the Malaria Institute of India.

The permanent establishment of the Institute consists of a Director, an Assistant Director, an Entomologist, an Assistant to the Director, a Malaria Assistant and appropriate subordinate staff. The new posts of a Deputy Director, an Assistant Director and of certain subordinate staff, which were recently created as a temporary measure for the duration of the war, should be made permanent. In view of the large developments that are likely to take place in the activities of this malaria organization the Central Health Department should bear in mind the importance of ensuring that it is adequately staffed.

19. *The provincial malaria organization.*—The general plan should be the creation of an organization at the headquarters of each province and, in addition, a number of malaria control units to operate in malarious areas in the districts. The number of these units will obviously depend upon the size of the province and the extent and degree of the prevalence of malaria in it. As an illustration, we may set out a plan for the province of Bengal. We think that about 150 such units will eventually be required for that province, but ft beginning may be made with ten. Others can be added as and when additional trained staff and funds become available. But it is essential that, even from the beginning, suitable transport should be provided for these control units in order to increase their mobility and effectiveness.

In the larger provinces it will be necessary to provide regional organisations also in order to ensure that adequate supervision is exercised over the peripheral malaria control units. In the smaller provinces, however, such regional organisations may not be necessary. Here the Provincial Malaria Officers and their staff should be able to carry out, the necessary supervision. This Provincial Officer should have the status of an Assistant Director of Health Services, and the Regional Malaria Officers may be designated Deputy Malaria Officers.

The complete organization for a large province such as Bengals may be developed on the following lines: —

1. Provincial Headquarters—

Provincial Malaria Officer	1
Entomologist	1
Sanitary Engineer	1
Overseers	4
Draftsman	1
Anti-malaria Officer	2
Anti-malaria Assistants	5
Laboratory Assistants	8
Insect Collectors	5

2. Deputy Malaria Officers

3. Malaria Control Units—

Anti-malaria Assistant	1
Laboratory Assistants	2
Malaria Supervisors	5
Fitter Mistri	1
Field Workers	25

Anti malarial field workers are semi-skilled laborers and should not be considered as coolies.

Lists of suitable equipment for the malaria organization at the provincial headquarters and for the malaria control units are given in Appendix 14 of Volume III of the report.

These estimates of the malaria organization desirable for a province such as Bengal, including staff and equipment, were prepared for us by the Director of the Malaria Institute of India. He has suggested the following approximate number of malaria control units for the different provinces.

	No. of control units		No. of control unite
Madras	100	N. W. P. Province	30
Bombay	60	Sind	60
Bengal	160	Ajmer-Merwara	5
United Provinces	150	Baluchistan	30
Punjab	60	Delhi Province	2
Bihar	100	Coorg	5
Orissa	50		
Central Provinces and Berar	100		982
Assam	80		

He has stated that, in calculating these requirements, he took into account such factors, in respect of each province, as the area, population, number of districts, number of villages and the degree of prevalence of malaria as indicated by (a) statistics of malaria mortality and (b) the percentage of fever cases on total cases treated at hospitals and dispensaries.

20. In our view, the most essential requirements are adequately trained personnel in sufficient numbers and the drugs, appliances and other equipment for carrying on effectively the campaign against the disease. We would, as a general rule, deprecate the spending of large sums on the erection of elaborate buildings in the early stages of our programme for, we believe that such money as is likely to be available can, at the beginning, be much more effectively used on staff and anti malarial measures.

21. We once again feel it necessary to stress the inestimable value •of good rural communications in increasing the effectiveness of all health and other workers employed on nation building tasks in such areas.

22. For details regarding the staff required for such an organization reference may be made to Appendix 14. The total expenditure involved in the development of malaria organisations in the Provinces and at the Centre, on the lines suggested by us, during the first five and the second five years of our short-term programme will be as under:—

	Non-recurring Expenditure	Recurring expenditure
	lakhs	crores
First five years	9.17	2 52
Second five years	11.10	3.85

These estimates have been made on the assumption that, during the first five years of the programme, the average number of malaria

control units which will be established in individual Governors' Provinces will be 10 and that, during the next five years, fifteen more such units will be added in each province. For each of the Centrally Administered Areas the corresponding numbers of units proposed is five for each quinquennium. Provision for the Hospitalization of Malaria Patients

23. When our short-term programme for the first ten years has been completed, provision for hospital accommodation for all classes of patients for the country, as a whole, should consist of (1) 30-bed hospitals for every group of two primary units, (2) 216 hospitals with 200 beds each and (3) 139 hospitals with a bed strength of 500 each in addition to the existing hospitals. While in the small 30-bed hospitals it will be difficult to allocate special beds for malaria,' we have recommended the reservation of 10 and 25 beds respectively for this disease in the 200 and 500-bed hospitals. Thus the number of beds available for the treatment of malaria will be, at the end of the ten year period, a little over 5,600.

24. By the time our long-term programme is reached such provision for malaria should have increased to the extent shown below:—

Primary unit hospitals	Secondary unit hospitals	District headquarter hospitals	Total
112,500	6,250	2,500	121,250

The number of primary units, by the time this stage is reached, Is likely to be in the neighborhood of 18,500 to 19,000. Each primary unit hospital will provide six beds for this disease and in view of the wide distribution of these units, provision for hospitalizing such patients will be spread throughout the country. In addition 10 and 20 beds, respectively, have been provided for malaria patients in the hospitals located at the headquarters of secondary units, which will generally correspond to the headquarters of a sub-division, and at the district headquarters respectively.

We trust, however, that before this stage is reached, effective and persistent anti-malarial measures will have resulted in materially reducing the need for hospital treatment for sufferers from malaria.

The Training of Malaria Personnel

25. It is anticipated that a certain proportion of the trained personnel of the anti-malaria organization at present employed in the Army will become available for the development of the civil malaria establishments in the provinces after demobilization. Nevertheless, in the immediate post-war period it will be necessary to train a large number of medical officers in order to fill such posts as those of the Provincial and Deputy Malaria Officers, Officers in 'Charge of control units, Entomologists and Malaria Engineers. We recommend that the training of these types of personnel should, in the immediate post-war period, be carried out in the Malaria Institute of India. It seems to us essential that the development of anti-malaria activities in the provinces should be promoted on fairly uniform lines and that the training of these higher types of malaria personnel should, therefore be carried out at the Malaria Institute of India for some time to come.

26. On the other hand, the training of overseers, technicians and Inspectors or supervisors can be carried out by the Provincial Malaria

Organisations in those provinces which have well-developed malaria establishments, namely, Bombay, Madras, the United. Provinces Bengal and Assam Until the remaining provinces develop similar organisations the requirements of the Punjab the N. W. F. Province and Sind can be met by making provision for the training, every year of a certain number of these types of personnel at the Malaria Institute of India, Delhi. Other provinces can perhaps secure similar facilities by negotiation with the neighboring provinces where the training of such malaria workers will be developed to meet their own requirements.

27. It will be seen that the training facilities to be provided at the main Institute at Delhi will thus be considerable. These training functions will necessitate the strengthening of the staff of the Institute beyond the additions suggested by us earlier in this chapter. We recommend that the Central Health Department should take immediate steps to investigate and determine what further strengthening of the establishment will be necessary in order '60 provide the training facilities the post-war health programme will require.

We think that the officers of the anti-malaria organization in the provinces should be able to train locally types of workers such as laboratory assistants and attendants, insect collectors, etc.

28. We wish to make it clear that these recommendations of ours for concentrating, the training of the higher types of malaria personnel at Delhi are of a purely temporary nature. When the anti malaria organisations in the provinces become fully developed the provision of training facilities for all types of malaria workers should in our view, be the responsibility of Provincial Governments. We have suggested, later in this chapter, the creation of Chairs of Malariology in selected medical colleges in order to provide facilities for undergraduate and postgraduate training in the subject as well as for stimulating research. Thus the provinces should, in due course, develop facilities for the highest type of training that may be required in Malariology.

Quinine and other Drugs for the treatment of Malaria.

29. We have already referred to the use of quinine and mepacrine for the treatment of malaria. It is possible that other drugs of greater therapeutic value may also be discovered as the result of scientific research. It is therefore, not easy to estimate accurately when levels of production in India should be recommended for the immediate future in respect of quinine and mepacrine, in order to ensure that proper treatment facilities are made available to a substantial proportion of the sufferers from malaria. All of us are however, agreed that it should be the responsibility of Governments, Central and Provincial, to fake, in mutual consultation, such steps as are necessary to ensure the production in India of anti-malaria drugs in sufficient quantities to meet the requirements of the country within the shortest possible period. We are equally agreed that the country should not again be placed at the mercy of a private monopoly which can control, to its own advantage, the price of these drugs which are essential for the maintenance of the health of the people. Whether, in making adequate provision for these drugs Governments should themselves undertake extensive programmes of production or whether private enterprise can be relied on to supply

the needs of the country through any system of guarantees or subsidies from the State, are matters on which we are unable to express an opinion with the information at our disposal. We can only lay down three general propositions: —

1. the prices at which anti-malaria drugs are made available to the people should be sufficiently low to enable the poorest classes to obtain them in adequate amounts for the effective treatment of the disease

2. these drugs, in whatever provinces they may be produced, should be made available, on an equitable basis and on reasonable terms, for the needs of all parts of the country and

3. no delay should be allowed to occur in developing their production.

We shall first consider the production of quinine.

30. (a) *Quinine.*—If Colonel Sin ton's estimate that at least one hundred million individuals suffer from the disease every year be taken as the basis of calculation, it does not seem unreasonable to assume that there will be at least 120 to 150 million cases to be treated annually in view of the fact that more than one attack is not an uncommon feature of the disease. The Malaria Commission has recommended 75 grains of quinine as the minimum quantity necessary for the treatment of a case. On this basis the amount of quinine required will be in the neighborhood of 1.3 to 1.6 million pounds per year. If quinine is to be relied upon as the sole drug for the treatment of malaria our objective should be an annual production of it to the extent of about 1.5 million pounds from cinchona, bark produced in the country. Some of us hold the view that this should be the definite objective which Governments should place before them and that every endeavor should be made to attain it within the shortest period that may be practicable. Others feel that the experience gained during the War with the large scale use of mepacrine in the treatment and prevention of malaria in highly endemic areas, makes it necessary to take into account the possibility of this drug replacing quinine to a greater or less extent in the treatment of the disease and that it would, in the circumstances, be safer to start with a more limited objective in regard to the production of quinine. The average annual consumption of quinine in India in the pre-war period was 210,000 lbs. and, of this amount, about a third was produced in India, a part of such production being, we believe from bark imported from Java. As a practical objective for realization as early as possible those of us who hold this view recommend the raising of quinine production to the prewar level of consumption in India, namely, about 210,000 lbs from indigenous bark alone. A cinchona plant begins to yield bark generally from the fifth year of its life, the period of high productivity being from the fifth to the ninth year. After the twelfth year its yield gradually decreases. In these circumstances the raising of the annual production of quinine even to the 210,000 lbs. mark from bark produced in the country will take some years. In the meantime the possibility of synthetic drugs displacing quinine wholly or in part, in the treatment of malaria may well be settled. This is a question of considerable importance which should be decided before

embarking on too ambitious a programme of quinine production, Such a programme is certain to involve heavy financial commitments which would not be justified if it became possible to produce cheaper and equally effective synthetic substitutes.

31. We, as a committee, would prefer to leave to the Governments in the country the responsibility for deciding whether private enterprise should or should not be associated with the production of quinine and of other anti-malaria drugs. If it is decided that such association is desirable it would be for Governments to determine the conditions under which private agencies should participate in production. One of us (Sir Frederick James), however, desires to see that private agencies are given the fullest opportunity to take part in quinine production with technical advice and a price guarantee provided by the State. We attach our colleague's note on the subject. We fully support his suggestion that research into the agricultural and manufacturing aspects of the quinine industry should be a governmental responsibility and that two experimental stations should be established to serve North and South India respectively,

32. (b) *Mepacrine.*—The pre-war annual consumption figure of 210,000 lbs. of quinine will provide treatment, at the rate of 75 grains per patient, for about 19.6 or nearly 20 million cases of malaria. If, as an immediate objective, we accept the provision of adequate anti-malaria drugs for the treatment of 50 million cases annually, then sufficient mepacrine will have to be produced to meet the requirements of 30 million patients. The minimum quantity of this drug for a complete course for a patient is 1.5 grammes or 15 tablets of 0-1 gramme each. The manufacture of 450 million tablets of mepacrine a year in India should therefore be the immediate objective.

33. *Pyre thrum and D. D. T.*—The main sources of pyre thrum, before the War, were Kenya and Japan but the cultivation of the plant has been successfully undertaken in various parts of India, including Kashmir, the Punjab Hills, the U. P., Central Provinces, Madras and Orissa. It has been shown that the yield of the active principle from the plants, grown in many parts of India, compares favorably with the flowers obtained from Kenya. In these circum stances, it may be reasonably expected that, in the course of some years, there will be an ample supply of pyre thrum grown in this country to meet all local demands. The Director, Malaria Institute of India has estimated that, in order to make the country self-sufficient, pyre thrum cultivation will have to be extended to about 320,000 acres so as to produce annually about 15.000 short tons (2,000 lbs. a ton) of pyre thrum flowers. This estimate makes allowance for a sixth of the total area under cultivation lying fallow each year.

34. As an insecticide the relationship of D. D. T. to pyre thrum Is somewhat similar to that of mepacrine to quinine in the treatment of malaria. There is the possibility, in both cases, of the synthetic substance replacing, to a greater or less extent, the use of the other. It may, however, be pointed out that the indiscriminate use of D. D. T. has been shown to result in the destruction of certain types of beneficial insects. It is quite likely that, in due course, adequate safeguards will be discovered and introduced in order to prevent

these detrimental effects. There is also the possibility that insecticide more potent than D. *D.* T. may be produced and brought into use. While recognizing that these possibilities should be given due weight, we think that the cultivation of pyre thrum in India should be developed until the use of D. *D.* T. has become established. Even when this stage is reached, the production of a certain amount of pyre thrum will still be necessary, if as has been suggested a combination of D. D. T. and pyre thrum is more effective than either of them alone. Another reason which has prompted us to advocate the continuance of its cultivation is that at short notice, it can, if necessary, be given up and replaced by other crops. Here again the steps required to foster the increased growth of pyre thrum must be decided by Governments after a full examination of the relevant factors.

We can only stress the necessity for a largely increased supply of pyre thrum flowers at a reasonable price and the duty of Governments in India to take immediate steps to ensure production on a scale sufficient for the needs of the country.

35. *Clinical research in malaria.*— while one line of attack on the malaria problem is through the control of the carrier types of mosquitoes, another should be directed towards the elimination of the reservoirs of infection. As relapses are quite common in malaria, a person who suffers from an attack of the disease continues, in an appreciable percentage of cases, to harbor the parasite for a varying length of time. The complete destruction of all the parasites in such persons should form an important part of an anti-malarial campaign. One of the limitations of all anti-malarial drugs so far available (including quinine, mepacrine and plasmoquine) is that they help to kill only such of the parasites as are present in the circulating blood of the patient while those which are harbored in the spleen and other internal organs escape. The achievements of chemotherapy have, during recent years, been so brilliant that it is quite conceivable that a drug may be discovered with power to kill the parasite not only in the circulating blood but also in those internal organs in which it finds refuge. Any such drug when discovered and tested in the laboratory can be considered to be effective only by a reasonably large field trial on human beings. We feel that there is need for the active promotion of combined biochemical and clinical research aiming at the evolution of a suitable drug which will help not only to cure the patient for the time being, but also to destroy the parasites in him completely.

36. We consider the promotion of active research in malaria to be of fundamental importance in this country. The creation of Chairs of Malariology in selected medical colleges is a highly desirable step in this connection. These professorships would serve a double purpose, namely, the fostering of research in malaria and the provision of adequate facilities for undergraduate and postgraduate training in -the subject.

37. *Legislation.*—The effective enforcement of anti-mosquito measures requires suitable legislation and we have given, as appendices 15, 16 and 17 respectively, the Model Mosquito Ordinance of the United States Public Health Service, the Straits Settlements Destruction of Mosquitoes Ordinance No. 174 and those sections of the Bombay City Municipal Act which deal with anti-mosquito measures, in order that they may be examined by the different health

authorities in the country with a view to seeing how far they may be followed as models.

Certain Suggestions by Sir Frederick James, O.B.E., M.L.A., for increasing Quinine Production

38. (1) Before deciding on the method of increasing the production of cinchona bark in India it would be well to study the production methods in the Netherlands East Indies which, before the War, supplied over 90 per cent, of the world's quinine. Their dominating position has been achieved through a combination of Government and private efforts and the systematic way in which the industry has been organized.

(2) Nine-tenths of the cinchona produced in the N. E. Indies comes from private plantations, but the improved types of cinchona and the improved methods of cultivation and propagation are derived from the work carried out at the Government cinchona plantations. Judged by ordinary standards of commercial accountancy the production of cinchona on private estates will always be-cheaper than on Government estates. If, therefore, the aim is to produce quinine at as reasonable a cost as possible, every attempt should be made to persuade planters to take up its cultivation.

(3) A Central Cinchona Bureau for India similar to the Kina Bureau of the Nether land East Indies should be established. Such a Bureau might well have two experimental stations, one situated in the North and the other situated in the South with plantations attached. If such a Bureau were placed under the Imperial Council of Agricultural Research, and private planters were associated with it, India would have taken the first step towards raising cheap cinchona, for the only bark which is really cheap is the bark of the high-yielding types.

(4) The main work on both these experimental stations would be the study of plant breeding, vegetative propagation, cultivation, manuring and the regeneration of plantations, which had already finished one cycle of cinchona growing.

(5) One of the reasons why cinchona production has been so backward in India is its provincialization in Madras and Bengal, the lack of an all-India policy, and the failure of the Governments concerned either to associate experienced planters with the development of their stations or to encourage private enterprise.

(6) On page 153 there are two general propositions: —

(a) ‘That the prices at which anti-malaria drugs, including quinine, are made available to the people should be sufficiently low to enable the poorest classes to obtain them in adequate amounts for the effective treatment of the disease. This will involve a certain' amount of price control and, in the event of private plantations being encouraged, profit control also. But the planting of cinchona is a risky enterprise and if profits are to be controlled in order to ensure that the price of quinine is kept at-a reasonably low level, then a guaranteed off take at a fixed price is the only inducement which will encourage private enterprise. The world price of cinchona has fluctuated around Rs. 20 per lb. and the experience of the Nether land East Indies has shown that a reasonably profitable industry can be a sound basis for a normal and constant production. This should be recognized by those who wish to see quinine provided at a cheap

price, for it can only be achieved if economy is effected in the costs of production and distribution by efficient management, or funds are provided from public revenues to meet the loss incurred by inefficient production. Costs of production can be reduced by scientific research and efficient organization, and of this, industry is well aware.

(b) That no delay should be allowed to occur in starting new plantations on an adequate scale. If a Central Cinchona Bureau is established, it should be fairly simple to plan production with a view both to ensuring supplies of bark to existing factories and where new areas are being opened up for the maintenance of other factories in full production.

Government stations should also assist by raising plants of good quality for sale t6 private growers. Sales would be partly adjusted to the cinchona which they desired to establish in any areas.

The cinchona industry should be essentially an all-India concern, but at present it is provincial and dealt with by two provincial Governments. If the price guarantee is agreed to by the Central Government, then it could be made conditional on a certain amount of control over policy, both of extensions and scientific research. If the Madras and the Bengal Governments are not prepared to associate the Imperial Council of Agricultural Research with the planning of the work at their stations, then the Central Government should establish its own research station in Coorg which is a centrally administered area and is suitable for plantation of cinchona.

2. TUBERCULOSIS

Introduction

1. Dr. P. V. Benjamin, Medical Superintendent, Union Mission Tuberculosis Sanatorium, Arogyavaram, South India, has estimated that the average annual number of deaths from tuberculosis in India is in the neighborhood of 500,000 and that about 2.5 million open cases of tuberculosis exist in the country These patients are continually disseminating infection among those with whom they come in contact. If these estimates can be accepted as reasonably correct, they provide some measure of the magnitude of the problem that faces the country.

2. While no surveys of sufficient magnitude have yet been undertaken to map out the distribution and intensity of tuberculosis infection in the country as a whole, the information available suggests that, broadly speaking, the incidence of the disease is higher in urban and industrialized areas than in rural regions. There is also reason to believe that, owing to the migration of labor population between industrial and rural areas and the increased facilities for road and rail transport that have been developing during the past, the tendency has been for tuberculosis to spread to the countryside. Certain social customs, such as purdah and early marriage, which often promotes a rapid succession of confinements, are favorable to the spread of the disease while such factors as malnutrition and under nutrition, insanitary and overcrowded housing conditions, also contribute their share to the dissemination of infection.

3. Existing facilities for an effective campaign against the disease are altogether meager. With about 2.5 million infective tuberculosis patients in the country the total number of beds available for

isolation and treatment is in the neighborhood of 6,000. The number of doctors with sufficient experience of tuberculosis work to qualify them for posts in tuberculosis institutions does not probably exceed 70 or 80, while those who have had a short course of four weeks in the subject may number about 250 or 300. Fully trained tuberculosis health visitors are in all probability only about 100. These figures help to indicate the immensity of the task that has to be accomplished before satisfactory control can be established over the disease.

4. The attack on the disease should be launched simultaneously in two directions, namely, *(1)* towards an improvement of the socio economic condition so as to provide for the people a higher standard of living, including better housing, adequate nutrition and sanitation of the environment in and around their homes, their workplaces and places of public resort, and (2) towards an effective control of the spread of infection from patients to those who are healthy. The importance of measures to improve living condition has been amply demonstrated in other countries where, even before anti tuberculosis measures were instituted, the mortality from the disease began to fall as the result of a rise in the general standard of living. While such measures are no doubt important, a direct attack on the reservoirs of infection is equally necessary. Without it any marked fall in the incidence of the disease cannot be expected. The amelioration of social conditions, including an improvement of housing and a rising of the standard of nutrition, goes beyond our field of enquiry, although we have referred, in appropriate places, to the necessity for sustained State action towards the achievement of definite results in these directions. We shall, therefore, devote our selves here to the question of controlling the incidence of the disease through measures directed towards restricting the spread of infection

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Control of the Spread of Tuberculosis Infection

5. The measures which we consider necessary are briefly indicated below: —

(1) Isolation of infective patients and the provision of adequate-treatment for them in order to make them non-infective.

(2) In the homes of such patients some of their co-residents may also be suffering from the disease without their being recognized as patients. Tuberculosis often starts in an insidious way and many-patients have been known to go on working until a serious breakdown in health takes place. Therefore, the contacts of all infective patients require examination and, if there be continued exposure to infection, there should be provision for their periodical examination.

(3) Patients, who become non-infective by treatment may, if they return to normal life and its strenuous duties, suffer a relapse and become infective again. The provision of a more sheltered life with facilities for employment suited to their state of health, under adequate medical supervision, constitutes a further important step in the organization of anti-tuberculosis measures. In this connection, the establishment of after-care colonies in association with every large tuberculosis hospital is a proposal which we shall consider later in this chapter.

(4) A certain proportion of the patients is generally so advanced as to make recovery practically impossible in spite of the best, medical attention. For such patients what is required is that the final release from pain and suffering should be made easy to the utmost possible extent and homes for incurables should form a part of the anti-tuberculosis organization.

(5) A comprehensive scheme of anti-tuberculosis activity cannot be carried out without the provision of adequate numbers of trained health personnel of the different categories that are necessary Therefore certain proposals for the short-term programme in connection with the provision of the required training facilities and the creation of a tuberculosis service will be referred to briefly here.

6. The measures under (1) and (2) above may be considered together. Isolation and treatment of infective patients are best carried out in tuberculosis hospitals and sanatoria. In the more advanced countries the provision for tuberculosis beds varies between the rates of one and three beds per tuberculosis death in the community. On these ratios India will require somewhere between half to 1.5 million tuberculosis beds, if Dr. Benjamin's estimate of 600,000 annual deaths from this disease is to be made the basis of calculation, while, as has already been pointed out, existing provision is in the neighborhood of 6,000 for the country as a whole While promoting the establishment and maintenance of tuberculosis hospitals as far as possible, it is clear that our approach to the solution of the problems of isolation and treatment will have to be on a much broader basis. The number of open cases requiring isolation will be in the neighborhood of 2.5 to 3 millions. Presumably, it will be impossible to expand hospital accommodation, within any reasonable length of time, to provide for all these patients. The most satisfactory method, therefore, of providing for the segregation of a reasonable proportion of the infective patients seems to be through the simultaneous development of a scheme for the isolation and treatment of patients in their own homes on as large a scale as-possible. We, therefore, place an organized domiciliary service in. the forefront of our tuberculosis programme. We recognize that, under existing conditions, there are numerous difficulties in the way of establishing such a service. We shall discuss these later when we deal with organized home treatment in greater detail.

A Comprehensive Tuberculosis Service

7. In order to provide a comprehensive and integrated service the tuberculosis organization should include (1) a domiciliary service (2) Clinics (3) hospitals (4) aftercare colonies (5) homes for incurables and, in addition, (6) certain ancillary welfare services.

8. *A home isolation and treatment service.*—In the last majority of cases the spread of the disease is by an open case infecting, through coughing and spitting, persons who are in relatively close contact. Children and young adults are particularly liable to infection. Certain simple precautions, if conscientiously carried out by the-patient, will suffice to make him comparatively harmless to those with whom he lives. He must live in a separate room, have his own-towels, crockery and other articles for personal use, protect his mouth with a handkerchief or a piece of cloth soaked in a suitable disinfectant when he coughs, spit into a small bottle or paper spittoon-containing the disinfectant and, in general, observe the rule that

neither by coughing nor by spitting does he spread infection to others. The paper spittoon may be burnt with its contents while the cloth or the bottle may be sterilized by boiling. Such simple precautions should go a long way towards controlling the spread of infection. In these circumstances, if suitable accommodation is available in the, patient's house for his isolation, the question of treating him there with proper safeguards against the spread of infection should present no serious difficulty. The existence of adequate facilities for isolation is important and this matter will be discussed presently.

9. We have already referred to a scheme for organized home treatment in Delhi in our review of tuberculosis in volume I of this report. The limited success which has been attained is due to (1) certain difficulties arising out of the war (2) the extremely unsatisfactory housing of the poorer sections of the community and (3) the inadequacy of the funds made available for the scheme.

10. The question of housing seems to present the greatest difficulty in respect of tuberculosis patients of the poorer classes, who live in single room tenements where isolation is impossible. It seems essential, as has been pointed out in the chapter on housing that post war plans for improved housing for the people should take into con side ration the fact that, in a country like India where a high incidence of morbidity from communicable diseases exists, domiciliary service must play an important part in the provision of adequate health care. Apart from tuberculosis many infective conditions, particularly those affecting children, will have to be treated in the majority of cases in the home and the provision of a room where suitable isolation can be practiced seems, therefore, to be essential. We recommend that, as a part of the anti-tuberculosis campaign, local health authorities should make themselves responsible for the construction and maintenance of a number of suitable dwellings into which the patient and members of his family can be removed. As has already been pointed out, the problem is most acute among the dwellers of one-room tenements. They will, on removal, have to be provided with accommodation free of charge. It must be remembered that housing implies certain social amenities such as contact with neighbors and friends and, when families are required to move away from their existing tenements, they are hardly likely to accept the offer unless free quarters are offered to them.

11. *The Tuberculosis Clinic.*—This institution is an essential link in the chain of organisations for the campaign against tuberculosis. It performs preventive and curative functions of great importance. The treatment facilities it offers will help to cure a certain number of patients while the more advanced cases will Be sent for treatment in hospital. The clinic is the centre on which the domiciliary treatment service for tuberculosis will be based. On the preventive side, the public health nurses working in association with the clinic will participate in the organized home treatment programme, advise patients on the carrying out of effective isolation, persuade their contacts to attend the clinic for examination and early detection of the disease, if present, and, in general, help to promote the welfare of patients and their families by establishing contact between them and voluntary organisations interested in welfare work. On the curative side, such of the patients as can undertake periodical visits to the clinic without aggravating their condition will receive medical attention at the clinic. Those, whose condition is too advanced for

attendance at the clinic, will receive domiciliary treatment from its medical staff. The nurse will be present on such occasions and, in the intervals between visits by the doctor, will carry out such measures as may be prescribed by him.

Thus the clinic will form the centre from which both curative and preventive work in tuberculosis will spread into the homes of the people.

12. *Tuberculosis hospitals.*—The more advanced cases, which the clinic cannot deal with adequately, as well as those patients for whom isolation at home is not possible should find admission into tuberculosis hospitals. In view of the difficulty of finding accommodation for even an insignificant fraction of those requiring institutional treatment, it is suggested that only such patients as are likely to benefit thereby should be admitted into hospitals. For the incurables we suggest separate provision later. As has already been pointed out, the provision of sufficient hospital accommodation to meet the requirements of the country is bound to take many years and, in the meantime, the organization of a domiciliary treatment service, with such facilities as can be made available, appears to offer a practical line of advance in the control of the disease.

13. *After-care of patients.*—In a considerable proportion of cases, tuberculosis patients do not completely recover their previous health and, after they return from the hospital to the adverse home and working environments, which were responsible for the onset of the disease, relapse may take place. It is, therefore, essential that less strenuous working conditions and a more hygienic home environment should be provided for him. In such circumstances, the patient can continue to work and earn something towards his main tenancy. Apart from this economic benefit, employment enables him to take his mind off his physical condition as well as to develop a sense of self-respect and remove the feeling that he is helpless and at the mercy of others. The physical exertion associated with his employment, provided it is regulated by proper medical supervision, is calculated to have a beneficial effect on his health. To meet these requirements we recommend that after-care colonies should be established in close association with every tuberculosis hospital that will be developed under our scheme.

14. *Homes for incurables.*—As has already been pointed out, the need here is for the provision of such care as will make the final phase of sickness reasonably comfortable for the patients. The homes that we suggest for such persons need not be built, equipped and maintained on a scale suitable for hospitals. There must, how ever, be provision for some measure of medical and nursing care. We recommend that Governments should undertake the responsibility for building and equipping such institutions. Their maintenance can, it is believed, be suitably entrusted to philanthropic or religious organisations interested in social welfare, Governments undertaking to meet a substantial part of the expenditure through generous grants.

Provision during Long and Short-term Programmes

15. We shall now indicate briefly the provision, we have recommended in our short and long-term programmes, for anti-tuberculosis work, including the creation of training facilities for doctors and other personnel.

Institutional service—

The first five-year period:

(1) The establishment of a 200-bed tuberculosis hospital for each unit of 10 million populations;

(2) The establishment of a large clinic (to be designated the "Main Clinic") with facilities for the training of medical and non-medical tuberculosis personnel, at each of the places where the 200-bed hospital will be created. On the assumption that the population of British India will be about 380 millions by the time the first five years of the programme will be completed, the number of hospitals and main clinics required will be 33 each.

(3) The establishment of clinics of a smaller type at the head-quarters of each district in British India. The total number required, after deducting the 33 main clinics, will be 183. Second five-year period:

(1) 33 more 200-bed hospitals;

(2) 33 more main clinics at the same places where the new hospitals will be located and

(3) 183 more district clinics.

The clinics and hospitals can serve only limited areas around the places where they are located. Even so, in these limited areas a domiciliary tuberculosis service should be organized in association with each clinic. A certain number of suitable cases will be sent by the clinic to the nearest tuberculosis hospital for more satisfactory treatment than can be provided locally.

We have not indicated where and in what numbers homes for incurables should be established. We have only thrown out the suggestion and would leave the matter for suitable action by the health authorities concerned.

While these proposals of ours are undoubtedly an advance on the existing state of affairs and will bring some measure of relief to limited sections of the population, the need exists for extending, as far as possible, such aid to the vast population of the rural areas also. The problem is by no means easy of solution. We may, however, put forward certain suggestions for consideration.

16. *Travelling tuberculosis units.*—the tuberculosis organization outlined above provides for peripheral units only at the headquarters of districts. One way of extending the activity of this organization is by providing travelling tuberculosis units based on the district clinics and working as far into the rural areas as possible. These units will be motor vehicles so equipped with all the necessary drugs and appliances, including provision for X-ray examination of patients, as to enable them to carry diagnostic and treatment facilities of a reasonably high order to the areas served by them. The medical officer in charge should have had special training in the subject and should be assisted by suitable subordinate staff.

17. In our health development scheme, we have recommended the establishment of a 30-bed hospital for groups of four primary units and of a dispensary at the headquarters of each primary unit. The medical officers in charge of these institutions will, while carrying

out medical relief, come across numerous frank and suspicious cases of tuberculosis. In order to help them in the diagnosis and treatment of such patients the travelling unit should, as a routine measure, visit these institutions at stated intervals. The two medical officers in charge of the primary unit and the four public health nurses will, apart from the medical relief given at the dispensary, carry curative and preventive care, as far as it lies in their power, into the homes of the people. In doing so, they will come across and deal with a certain number of tuberculosis patients. With the help of the ambulances that are available cases requiring the specialized skill of the doctor in charge of the travelling unit can be brought to the primary unit headquarters for examination and suitable advice. The examination of suspected cases among the contacts of such patients can also be undertaken by the unit. Thus the special facilities necessary for dealing with the disease can be extended into the rural areas also even during the short-term programme.

18. We anticipate that the need for a sufficient number of workers with special training in tuberculosis will probably postpone the inauguration of the travelling unit system to the beginning of the second five year term. We are advised that, if these travelling units are to give adequate service, they should be able to pay at least three or four visits per month to the headquarters of each primary unit and the places where the 30-bed hospitals are located. By the end of the first five years the number of primary units included in a secondary unit is likely to be 10 and, during each of the succeeding five years there is likely to be an addition of three primary units. At, the end of the first 10 years of our programme the number of primary units in each district will probably be '25. The proposed minimum of at least three visits by a travelling tuberculosis unit to each place in a month will necessitate about 35 to 40 such visits a month during the sixth year of the programme and about 70 to 80 visits during the 10th year if the whole area under our scheme in each district is to be properly served. Such travelling units required for each district will probably be two in the sixth year and four in the tenth year, on the assumption that, with the time taken for journeys and for work at the institutions to be served, the number of visits win probably be about 20 per month. Inadequacy of trained personnel and insufficiency of funds will, in all probability, make it difficult to provide, during the short-term programme, the number of travelling units indicated above. We would suggest that provision be made, in each district, for one such unit during the sixth and seventh years of the programme and for two during the next three years. We consider it essential that the service given to the people should be adequate and satisfactory, and we would therefore suggest a restriction of the area over which these travelling units will operate rather than an expansion of their activities over the whole territory covered by the scheme. The operation of this itinerant service can be extended as and when funds and trained personnel become available.

19. Another direction in which the travelling unit can help materials in the tuberculosis campaign is by carrying out intensive educational propaganda in the areas visited. A sufficient amount of educational material, including films, magic lanterns and slides. Leaflets and posters should be carried by the travelling unit and every effort should be made to interest" the people, including the local medical profession, in the subject of tuberculosis.

20. We consider it essential that, in our tuberculosis programme, such funds as are available should be devoted to the expansion of staff and equipment and not to the erection of costly buildings. In large parts of the country the weather is mild throughout the year and massive buildings for providing protection against extremes of cold and heat are unnecessary. Moreover, the tuberculosis patient feels all the better for as much fresh air and light as can be given, provided he is adequately protected against the direct rays of the sun and rain. Considerable saving in expenditure on buildings can, therefore, be effected and all available money should be devoted to the provision of adequate health services and of such ancillary aids to recovery as good food, suitable clothing and other comforts for poor patients.

21. The Long-term programme.—the following figures indicate the extent to which provision for the treatment of tuberculosis will be made by the time the long-term programme is completed.

Number of beds for the treatment of tuberculosis

Primary unit hospitals	Secondary unit hospitals	District headquarters hospitals	Total
75,000	75,000	67,500	217,500

There will be about 18,500 or 19,000 primary units scattered all over the country. The provision for tuberculosis in the hospitals located in these units will make treatment facilities widely available among the people. The total number of beds available for the isolation of infective patients will be about 217,500 or a little less than the ratio of 0.5 beds to each of the 500,000 estimated deaths from tuberculosis as has already been pointed out, in the more progressive countries existing provision ranges from 1 to 3 beds per tuberculosis death. It is to be hoped that, by the time the long-term programme is completed, the cumulative effect of all the health measures we have recommended will be to reduce substantially the mortality from this disease.

Training Facilities

22. We have dealt with the subject of training in tuberculosis for doctors and public health nurses in the section dealing with professional education. A reference to this matter is also made here in order to indicate briefly the provision for training which is to be made during the short-term programme.

23. The number of places, where facilities can be developed within a short time for the training of tuberculosis workers, medical and non-medical, is at present limited to five in British India. It is proposed that these should be supplemented by seven more training centers to be developed in the provinces during the first five years of the programme. During the next five years each of the 200-bed hospitals and each of the main clinics in association with it should form a. training centre. Thus there will be 45 centers working throughout the second quinquennium. It is also anticipated that, of the 33 new areas where a 200-bed hospital and a main clinic will be established, about 20 may be able to function as training centers during the last two years of the period.

24. We are advised by a special Sub-committee of tuberculosis experts, which we appointed, that about 13,000 medical men will require special training in tuberculosis in order to meet the requirements of the country. As regards public health nurses, we have

already stated our view that the same nurse should, when visiting the homes of the people, carry out all the functions relating to tuberculosis, maternity and child welfare, school health and other branches of health activity. It will thus be seen that the number of nurses to be trained in tuberculosis work will be considerable. A rapid expansion of training facilities has been suggested in order to meet this need for large numbers of trained doctors and nurses. Tuberculosis Surveys

25. In order to provide a sound basis for the organization of an effective campaign against the disease, information regarding the extent and nature of its incidence is essential. Information should be available as to which communities are most affected and what particulars age groups and which of the two sexes require special attention. A tuberculosis survey is meant to provide data throwing light on these problems. Such a survey may also reveal special factors, such as social customs and habits, economic and environ mental conditions, which may have a bearing on the incidence of the disease and whose elimination or control should form an essential part of the anti-tuberculosis campaign in the group or community concerned. Tuberculosis surveys should thus constitute a necessary function of the organization for combating the disease.

26. We have already pointed out in our survey of tuberculosis in Volume I that, in any community in which the disease has been prevalent for some time, appreciable sections of the population take up the infection, often in the early years of their life. In the vast majority of such persons the defensive mechanism that the human body possesses is able to deal with the infection effectively. Adverse socio-economic and certain other factors, such as the period of exposure to infection, the size of its dose and the age of the person largely determine whether the power of the invading organism to do harm becomes neutralized by the resistance of the individual or whether the organism gains the upper hand and is able to produce the disease. Even where the infection is suppressed for the time being it may lie latent and the individual may, some years later, develop tuberculosis under the stress and strain of hard living conditions. Thus, in a community in which tuberculosis has been prevalent for many years, persons who are healthy may, after some time, develop the disease either as the result of a recent infection or of a more remote one, which had been lying latent. A well-conducted tuberculosis survey will provide information regarding the extent of prevalence of infection in the community as well as the number of early and more advanced cases. In the more advanced countries of Europe and America, repeated surveys of the same population group are now being attempted as a valuable aid in detecting early cases, which are more amenable to treatment than patients in an advanced stage of the disease.

27. In our short-term programme, with the limited resources at our disposal and with the need for providing remedial and preventive care as widely as possible, we feel that large-scale surveys will not be possible. Nevertheless, the domiciliary health service, which we have recommended for development in association with every clinic, will itself constitute, in its day-to-day functioning, a survey of a somewhat limited character. At the same time, it is desirable that the trained staff of the clinic should undertake, as far as possible, surveys in limited population groups such as industrial workers. Such

the community as judged by skin tests such as the Monteux test and mass miniature radiography, as well as the detection of cases in all stages of the disease. Information regarding environmental and other factors associated with the incidence of tuberculosis should also be collected. In order to ensure that such surveys are carried out satisfactorily we cannot do better than suggest the adoption, by health authorities, of the recommendations contained in a memorandum embodying detailed instructions for the conduct of tuberculosis surveys, which was prepared by a special subcommittee appointed by the Tuberculosis Association of India.

Welfare Services

28. Welfare services form an essential part of the anti-tuberculosis organization. If a patient, who is a wage-earner on whom his family is dependent, is to be removed by the health authority as an open case and, therefore, dangerous to the community from the point of view of the spread of infection, it is necessary that his family should receive adequate financial help to maintain themselves. The field for welfare work is extensive and includes such matters as the provision of adequate nourishment, clothing, better housing and other comforts to necessitous patients and their contacts as a part of the domiciliary treatment service. Similar provision to after-care colonies should also be a function of the welfare organization.

The place of Voluntary Organisations in the Anti-Tuberculosis Campaign

29. We have already referred, in the review, to two major organisations engaged in the campaign against the disease, namely, the Tuberculosis Association of India and the Bengal Tuberculosis Association. The former has its branches in all the provinces and in a number of States while the activities of the latter are confined to Bengal. While realizing fully that, whatever extensions of State activity in the field of health may develop in the future, there will always remain, as far as we can see, opportunities for voluntary effort to play its part, we think that a demarcation of their respective spheres of action is desirable. In our view, it should be the responsibility of Government to make adequate provision for the care of all tuberculosis patients who are infective. The ultimate objective should be to ensure that no open case is left unprovided for. As regards after-care and welfare services we believe that Governments cannot absolve themselves of their responsibility, but voluntary agencies can also find here a field which offers a wide variety of use full activity in the interests of the community. The Tuberculosis Association of India has, during the few years of its existence, performed such functions as the offering of technical advice, through its Medical Commissioner, to Provincial and State health authorities the organization of special training courses in tuberculosis for doctors and health visitors, the holding of All-India conferences of tuberculosis workers and educational propaganda. The division of functions between Government and voluntary bodies which has been suggested above will make it the duty of Governments to train the required types of workers in adequate numbers and to maintain properly equipped and staffed anti-tuberculosis services the duties that are now performed by the Medical Commissioner of the Tuberculosis Association of India should, in our view be carried out by an expert staff which should be maintained on the establishment of

under the same auspices. In these circumstances, voluntary effort will tend to operate largely in the spheres of welfare service and educational propaganda. Such activities should, we. suggest, receive from Governments financial and technical assistance where this may be required.

3. SMALLPOX

Introduction

1. The average annual number of deaths from smallpox in British India, excluding Burma, during 1902-1941 are given below: —

Period	Average annual mortality
1902-1906	84,914
1907-1911	94,534
1912-1916	79,214
1917-1921	84,828
1922-1926	66,075
1927-1931	77,902
1932-1936	83,959
1937-1941	54,989

Although averaging in quinquennial groups of years has introduced a certain amount of smoothing, it will be seen that the above figures present a considerable degree of variation from one five-year period to another. This is due to the fact that the epidemic prevalence of the disease differs to a great extent from year to year. Even after taking into account this fact, it is considered that the disease has shown some decrease during recent years. The average annual number of deaths from smallpox in British India during the period of ten years, 1932-41, was 77.4 per cent of the corresponding figure for a similar period of ten years at the beginning of the century, 1902-11. When allowance is made for the increase in population that has taken place since the beginning of the century, the average rates of mortality from smallpox per 100,000 of the population are seen to be 40 and 25 respectively in the two ten-year periods under consideration. A decline in the incidence of the disease, as judged by mortality figures, is therefore evident. There is no room, however, for complacency when it is remembered that the average number of deaths per year from this disease during 1932-41 was as high as 69,484. Further, the annual epidemiological reports published by the League of Nations show that India has the highest rate of incidence of smallpox among the countries for which statistics are given.

2. Another disquieting feature of the situation is that, of the total mortality from smallpox, appreciable proportions are recorded at the age periods 0-1 and 1-10. During the five-year period, 1937-41, deaths due to smallpox among infants under one, when expressed as percentages of the total mortality from this cause at all ages, ranged from 12-1 to 19.7 and. during the same period, the corresponding percentages for children between one and ten years varied from 19.2 to 30.5. In order to show how heavy the incidence of the disease has been on these two age groups, we give below certain figures which are quoted from the 1937 Annual Report of the Public Health Commissioner with the Government of India. The expected

figures shown in the table have been calculated on the assumption that persons of both sexes and of all ages are equally liable to smallpox. It will be seen that, in practically every province, the actual are in excess of the expected figures. The selective incidence of the disease in these two age groups is, therefore, clear.

Deaths from Smallpox

	1937			
	Under one year		Between one and ten-year	
	Actual	Expected	Actual	Expected
NORTH-WEST Frontier Province	248	30	609	262
The Punjab	1,480	149	1,821	1,017
Delhi	244	20	359	142
United Provinces	933	99	1,034	785
Bihar	458	182	798	1,981
Orissa	267	61	391	505
Bengal	2,414	928	7,452	7,161
Central Provinces	170	16	224	114
Bombay	410	55	804	447
Sind	128	22	401	204
Madras	677	68	713	599
Assam	227	67	333	289

3. Apart from the extent of suffering and loss of human lives which these figures represent, it must be remembered that the complications that often accompany an attack of smallpox may produce, even- when the patient survives, various forms of disability, one of the most important being blindness. The high incidence of the disease among infants and children naturally results in such disabilities being produced in individuals who have to pass the greater part of their lifetime with such handicaps as these disabilities will entail.

Vaccination against Smallpox

4. This abnormally high incidence of suffering, incapacitation and' death is all the more deplorable because smallpox is perhaps the most easily controllable among the infectious diseases. If vaccinations are performed at regular intervals with potent vaccine lymph the level of immunity in the population can be raised so high as to eliminate smallpox as a community disease. The introduction of the infection on different occasions may give rise to sporadic cases but an outbreak of smallpox on a scale likely to threaten the public health will be rendered impossible.

5. The success that can be achieved in eliminating smallpox through vaccination has been demonstrated by the history of the

disease in the Philippine Islands. For many years smallpox caused more than 44,000 deaths annually in that country. After the introduction of systematic vaccinations the disease almost disappeared. Thus in six provinces, where smallpox used to be responsible for an. average annual mortality of 6,000 deaths due to this cause became reduced to an insignificant figure. In Manila, with a population of over 250,000, not a single death from smallpox occurred during a period of seven years. On the other hand, when the vaccination of new-born children and fresh arrivals in the city was not effectively carried out between 1915 and 1919 the disease reappeared and over 700' deaths were reported as the result of the epidemic. To quote an instance from India, we may turn to the Province of Madras. In 1922 and 1923, the Provincial Government introduced, in each district, a health organization consisting of a District Health Officer and a Health Inspector for each taluk. The employment of this staff gave an impetus to the campaign of vaccination against small-pox and increasingly larger numbers of primary vaccinations and' re-vaccinations were done each year. In 1932, compulsory revaccination for the whole population was introduced in municipal and non-municipal areas throughout the province, except Madras city. The maximum interval prescribed by law between successive vaccinations is 10 years. *I*n the city of Madras, compulsion was introduced in 1936 and the prescribed interval is seven years. The substantial' increase in the percentage of protected persons in the population resulting from these measures is reflected in the steady fall in the mortality from smallpox which is shown by the figures quoted below: —

Average annual death rate per Millie from smallpox in the province of Madras

Period	All Ages	Above the age of 10
1917-21	0.77	.3604
1922-26	0.46	.1747
1927-31	0.17	.0751
1932-36	0.22	.0362
1937-40	0.06	.0392

The large fall in smallpox mortality, at all ages, in the period;. 1937-40, as compared with the corresponding rate for those over ten years of age suggests that the vaccination campaign must have been more effective in protecting children under ten with their normal rate of high incidence of smallpox than older persons.

OUR PROPOSALS

6. The measures that are necessary for combating the disease are. (1) the isolation and treatment of patients, (2) observation of contacts during the period of incubation of the disease and their isolation as soon as they develop fever, in view of their becoming infective at this stage and (3) the enforcement of vaccination among the people at periodical intervals in order to raise their immunity to the highest possible level. In regard to the measures indicated under (1) and (2) above, it must be remembered that smallpox is highly infectious and that a patient becomes infective from the early stages of the onset of the disease. Therefore, it is almost certain that the patient will have passed on the infection to those who live with him sometime before the health authority becomes cognizant

of the occurrence of the disease. Further, in the presence of an epidemic, the provision of facilities for isolating all cases is well beyond the resources of most local authorities in the country. The range of inactivity of the disease is so great that home isolation affords little protection to the other members of the family. Under such conditions, observation of contacts has little meaning as a preventive measure. *In* the circumstances and particularly in the beginning of our health programme, intensive vaccination of the population at regular intervals appears to afford the quickest and the most effective means of controlling the disease. We shall, therefore, deal with this subject in some detail in the succeeding paragraphs.

7. We may set out our recommendations separately for (1) the areas that will be included in our health development scheme during the short-term programme and (2) those outside the scheme. Before doing so, we may discuss certain points which are common to both. These have already been referred to in our survey of smallpox in volume I of this report, but are again being briefly presented here for the sake of convenience.

8. Existing Position

(a) *Compulsory vaccination*—

(i) *Primary vaccination.*—Primary vaccination is not compulsory throughout the country. In 1941, only about 81 per cent, of the towns and 62 per cent, of the rural circles in British India were enforcing primary vaccination. There is no reason to believe that any appreciable increase has taken place since that date in the number of areas in which primary vaccination is enforceable. In the provinces, the percentage of towns enforcing compulsory primary vaccination varied from 100 per cent, to 52.7 per cent. The provinces backward in this respect are the N-W. P. Province, the United Provinces, Bombay and Assam. In the Province of Bombay, primary vaccination was enforceable only in 4.9 per cent. of the rural circles while in the N -W. F. Province, the United Provinces, Sind, Assam, Coorg and Ajmer-Merwara. Primary vaccination was not compulsory even in a single rural circle.

(ii) *Revaccination.*—There is no specific provision in the vaccination Acts of the provinces for compulsory re-vaccination. In the province of Madras re-vaccination is, however, compulsory under the provisions of the Local Self-government Acts relating to municipalities and non-municipal areas. In these Acts, the appropriate section states that vaccination shall be performed "as prescribed". Taking advantage of this provision, the Provincial Government issued statutory rules making re-vaccination compulsory throughout the province. In other provinces, the information available from the Annual Reports of the Public Health Commissioner shows that, occasionally, re-vaccination is made compulsory for limited periods and in specified areas through Temporary Emergency Regulations which are issued under the Epidemic Diseases Act.

(b) *Training of vaccinators, their recruitment and conditions of service-there* is considerable variation in the provinces as regards the training given to vaccinators, the methods of their recruitment and their conditions of service. The duration of the training varies from three to ten months. The salary paid to vaccinator’s ranges from a minimum of Rs. 10 per month in Bengal to a maximum of

Bihar and Orissa the conditions of service for vaccinators are most unsatisfactory. In Bihar paid vaccinators are employed only in municipalities and the scales of pay which are sanctioned by individual municipalities naturally vary. In all cases they are extremely low. In the rural areas vaccinators are given no salary at all nor do they receive any travelling allowance. The fees they may realize from the people for vaccinations carried out in their homes are their sole remuneration. They are engaged for Work only for the vaccination season (October to March) but in may be called upon for further duty during emergencies.

(c) *The methods of production of vaccine lymph at the different vaccine institutes.*—Vaccine lymph production is undertaken at the provincial centers of Belgaum, Lahore, Patwa Dangar, Calcutta, Guindy, Nagpur and Ranchi. The lines of production at the Institutes in all these places follow generally the accepted procedure in other countries. There is therefore no need for any marked departure from existing practice.

(d) *The conditions under which vaccine lymph is distributed and-used by vaccinators.*—There is reason to believe, from certain investigations carried out by an Officer on Special Duty in the office of the Public Health Commissioner with the Government of India, that the present methods of distribution of vaccine lymph are not -such as to ensure its potency when actually used.

(e) *The vaccination season.*—in the provinces vaccination is carried out only during the cold weather, usually from October to March, the underlying idea being that in the hot weather the greater exposure to heat of the vaccine lymph is likely to produce deterioration in its quality. The result is that for about half the year no vaccination is carried out unless there is an outbreak of smallpox.

The Rectification of the above-mentioned Defects

9. We consider it essential that primary vaccinator should be made compulsory throughout the country without delay. The Province of Madras has shown that periodical re-vaccination can also be introduced and worked successfully even in the rural areas. In our view other Provincial Governments should follow this example as early as possible.

10. Vaccination against smallpox should be the normal function of a properly developed health service such as we have recommended and no special class of vaccinator should be employed. In the early stages of our health programme their employment will, however, continue to be necessary in the areas outside our scheme. So long as this is so every endeavor should be made to remove the existing wide disparity between the provinces in regard to their training and -conditions of service. The period of training should be about six months. Apart from the technique of vaccination, they should be taught (1) to keep their records correctly, (2) to check the unprotected children's register in the villages during their tours as well as the birth and death registers, on the accuracy of which the correctness of the unprotected children's register will depend and (3) to carry out such duties as sterilization of wells and the reporting of cases of infectious disease which come to their notice during their tours

11. As the health organization, we propose, will not be functioning in these areas it is desirable that the services of the vaccinator should be utilized not only to protect the people against smallpox but also to carry out various minor duties which will help to raise health administration to a higher level than that which prevails at present.

12. No man can be expected to do public health service satisfactorily unless he is adequately paid for it. We recommend a scale of pay of Rs. 40—2—70 for a vaccinator and security of tenure. We have suggested this scale of salary because we consider that, as our health scheme expands, the more efficient among these vaccinators should, after such additional training as may be necessary in each case; have opportunities of being promoted as health assistants and later as public health inspectors. The scales of pay which we have recommended for the two latter posts are Rs. 60—5—100 and Rs. 100—5—150.

13. The question of ensuring the potency of vaccine lymph during its use in the field and of extending the vaccination season into the hot weather is inter-connected. We recommend that the possibility of providing facilities for cold storage in a number of places in each province, in order to keep the lymph at its original strength for prolonged periods, should be investigated. The development of a number of such centers in a province will help to shorten the period of exposure to heat that the lymph has to undergo during its use in the field. With the creation of such storage facilities it should be possible to carry out vaccination throughout the year.

OUR RECOMMENDATIONS

The Areas under our Scheme

14. Vaccination against smallpox should be one of the normal functions of the public health inspectors, public health nurses and mid wives employed in each primary unit. We realize that the establishment of a special class of vaccinator was justified in those days when this was the first form of public health activity taken up by the authorities. But vaccination is only one of the many forms of specific protection against particular diseases which the Health Department should provide for the people and the operation itself is so simple that there is no justification for the employment of a special staff for this purpose in the areas where our health programme will be introduced.

15. The average population of a primary unit in our short-term programme is about 40,000. The aim should be to ensure adequate protection to the whole of this population. In view of the unsatisfactory results which have so far been achieved by vaccination in the past, particularly in the rural areas, we recommend that during the first year the whole population should be vaccinated. There after, the operation need be repeated only every five years. In Java it is understood that one man can vaccinate 500 persons per day provided proper arrangements are made for the collection of the people beforehand. Even assuming that this standard of efficiency may not be attained immediately in India, 250 persons per day cannot be considered as an unreasonably high figure. The total work involved in a primary unit is, therefore about 160 man days and, when distributed among a staff of 10 persons

including the public health inspectors, nurses and mid wives it represents for each individual only 16 days work in the year. Taking into consideration failures of vaccination and the need for repeating the operation the total period for each member of the staff should not extend beyond 18 or 20 days.

The Areas outside our Scheme

16. An intensive campaign against smallpox should be organized without delay in these areas also. With the type of training and improved conditions of service we have already recommended for the vaccinator we believe that a reasonably efficient worker will be produced, who will help to raise not only the level of immunity against smallpox in the population, but also to make more effective the campaign against other diseases such as cholera, through the preventive work he would perform.

17. The average number of vaccinations performed in a year by a vaccinator differs considerably in the provinces. It was as low as 1520 in Bihar in 1939 while the highest figure of 7,587 was recorded in the Punjab as against an average of 2,951 for British India as a whole. Among the eleven Governors' Provinces seven gave figures falling short of this average. They were the United Provinces, Bihar, Orissa, Bengal, Assam, the Central Provinces and 'Sind. On the other hand, the performance of vaccinators in the provinces of Delhi, the Punjab and the North-West Frontier Province was more than twice the average figure for British India.

18. What should be the number of vaccinators to be prescribed for specific units of rural and urban population? In determining the number of vaccinators for rural and urban areas, the wider distribution of population and the smaller facilities for travelling in rural areas, as compared with towns and cities, should be taken into consideration. Conditions vary to such an extent between individual urban centers and among villages that it is not easy to give due weight to these factors and prescribe suitable standards.

19. In the province of Madras where compulsory primary and re-vaccinations have been in force for some years, the Director of Public Health states that the minimum for primary vaccination is fixed at 3 to 3.5 per cent, of the population per annum in both urban and rural areas and at 6 per cent, for re vaccinations. The average birth rate in the province is estimated at 40 per mile and it is stated that due allowance has been made for infantile mortality in fixing the minimum for primary vaccination at 3 to 3.5 per cent, (or 30 to 35 per mile) of the population. This provides for an infantile mortality rate ranging in different places from 125 to 250 per 1,000 live births. Even if the rate be higher in certain places, the prescribed percentage of 3 to 3.5 for primary vaccinations will probably prove satisfactory for some time because a certain proportion of older children and adults would have escaped vaccination in infancy.

20. It will be seen that primary vaccinations and re-vaccinations will together cover about 9 to 9.5 per cent, of the population in Madras every year, and in 10 years at least 90 per cent. Will be immunized. Thereafter, the proportion will be kept at that level. In view of administrative difficulties in keeping correct records of the vaccine condition of the adult population, a certain proportion of whom move

about from place to place, such a level of performance may be considered satisfactory.

21. A total number of 834 vaccinators was employed in the province of Madras in 1940 and the average number of vaccinations for each man was in the neighborhood of 6,000 per year. This is the standard of performance in the provinces of Delhi, the Punjab and the N.-W. F. Province. There is no reason why the other provinces should not reach this standard. in determining the number of vaccinators required for rural and urban areas in the different provinces, the standards prescribed by the Madras Government seem satisfactory, provided the interval between re-vaccinations is fixed at 10 years. When dealing with the large populations of the provinces of India this interval can be accepted as reasonably satisfactory. If individual provinces were to fix the annual minimum number of vaccinations to be performed by a vaccinator at 6,000 and prescribe that, in each rural and urban vaccination circle, the annual minimum for primary vaccination should be about 3.5 per cent of the population and for re-vaccination 6 per cent., it should then be easy to work out the total number of vaccinators required for the province concerned and their relative strength in the different circles.

22. We have described at some length the procedure in Madras in the hope that the information given will prove useful to other provincial authorities when they proceed to enforce a campaign of intensive immunization against smallpox.

The Long-Term Programme

23. We anticipate that, by the time the long-term programme is completed, immunization of the population against smallpox by the enforcement of vaccination at periodical intervals will have become such an established practice as to have eliminated the disease from the country except as sporadic outbreaks resulting from the introduction of infection from outside.

24. Other factors helping towards the elimination of smallpox in an epidemic form in the community will, it is expected, also come into existence. These include, among others, better housing conditions which will help to prevent or at least reduce overcrowding as compared with the existing state of affairs and a spirit of active co-operation with the health authorities arising out of the peoples intelligent understanding of the purpose to be achieved by the measures instituted against the disease.

4. CHOLERA

Introduction

1. Certain parts of India have the reputation of being endemic-areas for cholera. The Bengal delta and the basin of the Cauvery river in the province of Madras have been considered as such are a sand it has been suggested by more than one health authority that epidemic outbreaks of the disease arise in these regions and spread to different parts of the country. During the nineteenth century there occurred three or four pandemics of cholera, which covered in their sweep the continent of Europe, the British Isles and even America. These pandemics have been traced to India as the place of origin. Along with smallpox and plague, cholera is another important disease against which a number of countries, with whom

India has trade relations, impose quarantine restrictions, from time to time, on passengers from this country by land, sea or air.

The Geographical and Seasonal Incidence of Cholera

2. There is perhaps no infectious disease which shows a greater variability in its incidence from year to year than cholera. Below are given figures of cholera mortality in British India, excluding Burma, as averages for quinquennial periods from 1877 to 1941: —

Period	British India (excluding Burma)
	Annual average
1877-81	288949
1882-86	286105
1887-91	400934
1892-96	443890
1897-01	383294
1902-06	367160
1907-11	397127
1912-16	328593
1917-21	297756
1922-26	143890
1927-31	297756
1932-36	140440
1937-41	147423

It will be observed that, in spite of the smoothing introduced by averaging in five-yearly periods, the range of variation is extensive, from about 141,000 to about 444,000. If figures for individual years-were examined the variation in the figures would be found to be even higher.

3. The incidence of cholera in India varies from province to province and from year to year. The provinces, where its incidence is high, are Madras, Bengal, Bihar and the Central Provinces and, to a smaller extent, Orissa and the United Provinces. A striking feature of cholera is the regularity of its seasonal incidence in the different parts of the country; for example, in Bengal the peak of the epidemic is generally reached between March and April, in Bihar in May, in the United Provinces about June and in the Punjab in August. While it may seem reasonable to expect that modern developments in rail and road transport would facilitate the spread of the disease, a striking feature of the epidemiology of cholera is that its ostensible westward movement, as indicated by its seasonal prevalence, has, broadly speaking, remained undisturbed from the time when such facilities for travel were not available. There must, therefore, be other factors responsible for the appearance of the disease at specific seasons of the year in particular areas and, although certain explanations have been put forward, no complete and convincing answer to this question is yet available.

4. The seasonal character of the incidence of cholera does not however, mean that its spread is not associated with large movements of population. Pilgrim centers, which attract at intervals large numbers of visitors, have, indeed, played an important part in the dissemination of the disease and, in more recent years, the enforcement of rigorous sanitary measures in connection with such festivals has become a recognized public health procedure throughout the country. We shall refer to this subject in greater detail later.

Preventive Measures

5. In the case of cholera, as in many other communicable diseases, the main reservoir of infection is man. The patient excretes the

organism in large numbers in his stools and vomited material while it is known that, for a period varying from a few days to a few weeks after the attack, his stools continue to be infective. Such evidence as is available does not support the idea of chronic carriers of cholera infection as in the case of typhoid. It is, however, known that healthy persons in contact with patients may sometimes take up infection and, without themselves falling ill, communicate infection' to others. The life of the organism is, as far as is known, of short duration in water and in the general physical environment. The common channels through which the germs are distributed have long been known to be articles of food and drink contaminated with the infective material.

6. The preventive measures fall under two main heads, (1) those which are directed towards blocking the channels of infection and (2) those which are designed to promote an increase in the resistance of the individual and of the community against the disease.

Control of the spread of Infection

Measures for controlling the spread of cholera should include:—

(1) isolation and treatment of the patient, special attention being paid to the sterilization of infective material and, before the necessary measures for this purpose can be carried out, to such steps as will prevent the conveyance of infection through flies or other agents to human beings or articles of food and drink;

(2) Sterilization of common water supplies which, in areas without a protected water supply, are likely to be contaminated with cholera material; and

(3) a general improvement in sanitation, one result of which will be to eliminate flies and other insects that play an important part in the transmission of infection.

The Strengthening of the Resistance of the Individual and of the Community to Infection

The most important measure in this connection is preventive inoculation against cholera." Other measures mainly consist of the practice of personal hygiene, including special precautions to avoid the consumption of unripe fruits and other articles likely to upset the smooth functioning of the digestive tract.

7. From our brief discussion of the cholera problem in India in the preceding paragraphs, the conclusion seems to emerge that the campaign against the disease should concentrate on its effective control and eventual elimination in those areas, which have been considered endemic foci by health authorities because a tendency has been noted for its more frequent occurrence in such areas than in others. A considerable improvement of the sanitation of these areas including the provision of protected water supply, satisfactory disposal of night soil and rubbish and control of food and drink in order to ensure freedom from contamination form the most important permanent steps for stamping out the disease. Other measures, such as isolation and treatment of patients, disinfection of infective material, preventive inoculation and the practice of personal hygiene are undoubtedly of value for controlling its spread during specific outbreaks but, in the absence of the steps necessary for securing a definite and lasting improvement in environmental

'hygiene, there can be no elimination of cholera as a community disease. Further, even the success achieved by the active prosecution of the measures outlined above for controlling individual outbreaks is bound to be of a limited nature.

8. These views of ours are in conformity with the results of recent researches on cholera carried out between 1934 and 1940 under the auspices of the Indian Research Fund Association. In a survey of the results, MAJOR-GENERAL Sir John Taylor, who was till lately Director of the Central Research Institute and Chairman of the Cholera Advisory Committee of the Association, has stated that the point at which preventive measures should be applied is the area from which infection is primarily derived—that is in the endemic areas. The application of a long-term policy of sanitary improvement in the known endemic areas, especially directed towards dealing with the factors concerned in the maintenance and spread of cholera would, in time, result in a great reduction of risk and might even succeed in eventually eliminating infection altogether."

9. Such permanent improvements will, it may be noted, control not only the incidence of cholera but also that of other bowel diseases such as enteric fevers, dysentery and diarrhea. Although no reasonably correct estimate of their total incidence is available it may not be far wrong to assume that these diseases may together be responsible for two or three times the number of deaths due to cholera, because the average annual registered mortalities from dysentery and diarrhea together form about 180 per cent of that from cholera.

10. We may now take up, for separate consideration, the different measures we have discussed above. These can broadly be divided into two groups: permanent and temporary.

Permanent Measures

11. Of these the most important is the provision of protected water supplies and of satisfactory systems of night soil disposal. We have suggested, in the chapters dealing with these subjects, the need for a comprehensive programme of development of urban and rural water supplies and drainage. It is suggested that, in providing these basic facilities for sanitary improvement, Provincial Governments should direct that those who are responsible for drawing up plans should, in fixing priority, take into consideration the incidence of cholera in individual villages and towns. In this way, the more important centers of cholera prevalence can be brought under control and the spread of the disease from such sources of infection prevented. We have suggested that the provision of protected water to the whole population of British India should be completed in a period of about 85 years. Side by side with this, the establishment of sound night- soil disposal systems, on the lines indicated in the chapter dealing with general sanitation, should also be proceeded with in the provinces.

12. Simultaneously with these improvements the gradual extension, over the country as a whole, of the health organization we have recommended should help to introduce a large measure of control over the food of the people to ensure freedom from contamination and to promote a rise in the general level of environmental hygiene. 'The combined effect of all these measures will be, we have no doubt

to produce a marked reduction in the incidence of cholera and of other bowel diseases.

Temporary Measures

13. These are mainly directed against a threatened or current outbreak of the disease. Such measures include:—

(a) notification of cases;

(b) isolation and treatment of the patient wherever possible, and disinfection of infective material;

(c) sterilization of water supplies liable to contamination and their protection against the possibility of becoming infected later;

(d) preventive inoculation;

(e) special health measures in respect of festival centers and other places where large gatherings of people take place periodically and

(f) Educational propaganda in order to secure the co-operation of the people in carrying out anti-cholera measures.

14. (a) *Notification of cases.*—Cholera is a notifiable disease in urban and rural areas throughout British India. Nevertheless, for reasons stated in the chapter dealing with vital statistics, notification is not, in many parts of the country, either sufficiently prompt or complete to permit of early and comprehensive action being taken by the health authorities. Without going into details it may be stated that, both in the areas under our scheme and in those outside it, the carrying out of our proposals should help to ensure that cases are reported promptly and that omissions to notify are reduced to the utmost possible extent.

15. (b) *Isolation and treatment of patients, wherever possible, and disinfection of infective material.*—Isolation of patients is an important measure but, until existing hospital accommodation increases considerably, it will be difficult to ensure their isolation to any large extent. The incidence of the disease is high among the poorer and lower middle classes of the population and, both in urban and in rural areas, housing conditions are as unsatisfactory as to make home isolation of little practical value. Further, when the disease appears in epidemic form, the number of villages affected and the number of persons attacked in individual villages may often be so high that any attempt to isolate all patients may be impossible.

16. In our review, earlier in this chapter, of existing provision for the segregation of patients through infectious diseases hospitals, we pointed out that the working of most of *these* institutions, although they are situated in large cities, was very unsatisfactory. There is no justification for such a state of affairs and the matter should receive immediate attention from provincial health authorities.

17. For the large number of patients, who cannot be removed to hospital, home isolation should, whenever possible, be advised by the health staff. The supply, without payment, of suitable disinfectants to such homes and to all others, where cases occur, and instruction of the patient's relatives in the proper use of these disinfectants should help to check the spread of the disease. As far as possible, the health staff should assist in the carrying out of such disinfection.

18. The provision of home treatment for cholera should also be attempted, wherever possible. It is recognized that continuous medical care including the timely administration of hypertonic saline, would be almost impossible in the home, especially when a severe outbreak results in the necessity for treating a large number of patients at the same time. Additional staff of medical and auxiliary personnel from other areas should be rushed to the affected towns and villages and every effort should be made to make such treatment available to the people. As the health programme develops, an increasing provision of staff and of institutional facilities should help *to* make the medical care available to the people during such outbreaks more and more adequate.

19. (c) *Sterilization of water supplies liable to contamination and their protection against re-infection.*—The provision of protected water supplies to both rural and urban communities throughout the country is the objective to be reached as soon as possible. Until it is attained, we must look to the primary unit staff in the areas under our scheme to carry out effectively the sterilization of water-supplies in cholera-infected villages. Where there are several sources of drinking water in such villages, it should be possible to ensure that only a few of these sources, which can he repeatedly sterilized and kept under control, are used by the people.

20. (d) *Preventive inoculation.*—The popularity of anti-cholera inoculation has been a process of steady growth. The report of a special Committee of the Central Advisory Board of Health, which investigated the question of compulsory anti-cholera inoculation of pilgrims attending festival centers, shows that, between 1928 and 1938, the number of inoculations in British India rose from about 3,400,000 to nearly 10,800,000 per year. Taking these figures and other evidence available to us into consideration, we came to the conclusion that public opinion in favor of inoculation had developed at an altogether unexpected rate. During the past two years, when the abnormal conditions arising out of the War produced widespread outbreaks of the disease in different parts of the country, millions of inoculations were Carrie-out and there was no opposition from the people to the enforcement of this protective measure. For instance, in Bengal alone, within the period from 1st November 1943 to the end of September 1944, there were about 18 million* inoculations.

21. The primary unit staff should be able to carry out, within its area, an effective immunization of the people when an outbreak of cholera or the threat of an outbreak makes the conferment of such protection necessary. In this inoculation campaign the doctors, public health inspectors and public health nurses should all participate and thus quickly protect a large section of the population.

22. The question of permitting non-medical personnel, such as public health inspectors, *to* carry out preventive inoculation against epidemic diseases was carefully considered by the Central Advisory Board of Health in 1940 and its decision was in favor of their being permitted to do so under proper supervision. Since then it is understood that, in a number of provinces, the health authorities have been utilizing the services of these inspectors for inoculation campaigns during epidemics. Fully trained public health nurses and even health visitors, after being suitably instructed, should be

able to carry out such inoculations. We recommend that, by frequent inspections, the two medical officers of the primary unit should exercise, especially during the early stages, adequate supervision over all non-medical personnel engaged in carrying out such inoculations, in order to ensure that efficient sterilization and other necessary precautions are taken by them.

28. (e) *Special health measures in festival centers.*—In view of the recognition of the part which the large periodical gatherings of people at festival centers can play and have played in the spread of infectious diseases, particularly cholera, it has become a recognized practice for provincial authorities to take elaborate measures on such occasions. Considerable emphasis is laid on an improvement of the sanitation of the locality, inspection posts are established at all points where traffic converges on the festival centre by road, rail or waterway, and special provision is made for the control of food and water supplies, for medical relief, for the detection of cases of infectious diseases and for the proper segregation and treatment of such cases. In addition to these measures, it has been found useful to enforce the compulsory inoculation of persons against cholera before they are permitted to attend festivals. In 1940 the Central Advisory Board of Health, after carefully considering the report of a special committee which it had appointed to investigate this question, gave its blessing to the proposal that health authorities in India should adopt this additional precautionary measure in festival centers. Later the efficacy of this measure was again tested at the Sitamarhi festival in Bihar, and excellent results have been reported. In these circumstances, while recognizing that all the other measures indicated above are necessary in order to ensure the health of the pilgrim population, we would endorse the recommendation of the Central Advisory Board of Health and suggest to Governments the desirability of enforcing compulsory inoculation against cholera before a pilgrim is permitted to attend any specific festival, whenever the possibility of an outbreak of the disease cannot be ruled out.

24. (f) *Educational propaganda.*—While all the measures outlined above are undoubtedly valuable, the extent of their usefulness will be largely determined by the amount of co-operation that can be secured from the people. Intelligent co-operation can be based only on a full understanding by them of the purpose underlying the measures and on their acceptance of the need for their enforcement. Educational propaganda constitutes, in our view, the most efficient means of securing the support of the people, and such propaganda should, therefore, form an important part of our anti-cholera programme. The war against disease and dirt will have been half won if the community can go forward to the fight armed with sufficient knowledge to enable each individual to fulfill his or her part with zeal and effectiveness.

25. We recognize that an anti-cholera campaign on the lines outlined above can be carried out more effectively in the areas where our scheme will operate than in those not included in it. The suggestions we have made, earlier in this chapter for increasing existing provision for medical relief and for facilitating control measures against epidemic diseases through the establishment of travelling dispensaries and of epidemic squads will, it is hoped, help to

promote the carrying out of anti-cholera measures in a more efficient manner than has been possible in the past.

5. PLAGUE

The Incidence of Plague

1. Plague was introduced into Bombay from China in 1896 and, within a few years, it spread widely through the country. Its maximum incidence was reached in 1904 with a registered mortality of 1,144,000. Since then, a steady reduction in its prevalence has taken place, the past decade or more having witnessed a considerable fall in the annual mortality from this disease. The figures given below, which are quoted from the Preliminary Report of the Public Health Commissioner with the Government of India for 1939, indicate clearly this decline in the incidence of plague:—

British India

Period 1	Total plague deaths 2	Figures in column 2 expressed as percentage of total deaths during 1898—1938 3	Annual average 4
1898-1908	6,032,693	49	548,427
1909-1918	4,221,528	34	422,153
1919-192	1,702,718	14	170,272
1929 1938	422,880	3	42,288
	12,379,819		

The average annual mortality from this cause during the three years 1939, 1940 and 1941 was only 19,347 or 45.7 per cent of the corresponding average for the ten-year period 1929—38.

2. *The epidemiology of -plague.*—while this continued decrease in-the incidence of plague is no doubt gratifying, it must be remembered that this decline has not been brought about by the effectiveness of any specific measures undertaken for its control. The history of plague in India and elsewhere clearly indicates that the prevalence of the disease, during certain periods, increases considerably both by an extension of its geographical distribution and by a rise in its incidence in individual places, while at other times there occurs a. diminution of the disease, through a rapid contraction of the territory covered and a marked decrease in the number of cases occurring in the affected areas. In India too, both these changes have characterized the marked decrease in the incidence of the disease during recent years.

3. Plague is primarily a disease of certain rodents and human infection on an appreciable scale takes place only under conditions favoring close association between man and such rodents. In certain parts of the world, plague infection among such animals never dies-out and these constitute endemic areas from which infection spreads to other regions from time to time. In India the animal is the rat while in South Africa it is the grille, in California the ground

squirrel and in South-eastern Siberia and Manchuria it is the tarbagan. Periodically outbreaks of the disease take place on a large scale among such animals and destroy large numbers of them. *For* a time the infection lies dormant but, when the animals breed and a large susceptible group is produced, an epidemic wave starts again.

4. Man becomes infected from such animals through the bite of the fleas which live and feed on them. Without going into details regarding the mode of transmission of infection it will be clear that opportunities for close association between man and the special rodent responsible for keeping alive plague in the area concerned is a fundamental factor for the production of the disease in human com munities. Widespread outbreaks among such animals may lead to territorial extensions of plague while the transportation of infected rats or infected fleas through grain traffic or in other ways may result in the starting of the infection in areas far removed from the endemic foci of the disease.

Lieut-colonel S. S. Sokhey, I.M.S., Director, Haffkine Institute, Bombay, who has for many years been associated with plague research, considers that a number of such endemic centers exists in India.

5. Plague appears in two main forms, bubonic and pneumonic.
The former is characterized by the development of buboes or swellings in the groin, arm-pit or neck of the patient and, although it is the less severe form of the two, the rate of mortality may be as high as 60 to 70 per cent among those who are attacked. It is in the transmission of bubonic plague that the rat and certain types of rat fleas play their part. Pneumonic plague is a form of severe pneumonia set up by the plague germ and its infection is conveyed from person to person through the air. The chance of any one in contact with a patient contracting pneumonic plague is very high and the rate of mortality is practically cent per cent. The large majority of plague cases occurring in India is of the bubonic type. Occasionally, through causes which remain largely unexplained, a case of pneumonic plague starts in the midst of a bubonic outbreak and then it runs a rapid course killing off all those who are attacked. In India such outbreaks of pneumonic plague have been so far strictly limited in the extent of their prevalence, a termination being reached with the extermination of the specific group exposed to infection. In colder countries such as Siberia, the disease may start with a limited number of bubonic cases, but plague pneumonia soon appears on the scene and the subsequent spread of the disease has often been rapid and extensive, with the result that thousands have succumbed to it during specific epidemics. Probably the climate is an important factor in determining the type of plague. Greenwood* states that, in the fourteenth century, plague as it spread slowly across Europe, exhibited the tendency to become pneumonic in the winter and to change to the bubonic form when the weather grew warmer.

6. *Anti-plague Measures.—In* India bubonic plague is the disease with which we have mainly to deal. As this form of plague is essentially a disease of rats in this country and as cases in human beings occur through the transference of infection from rats to man, the most important preventive measure in regard to the control of this

* “Epidemics and crowd-diseases” by Major Greenwood.

disease is the keeping down of rats in residential areas, which must help to prevent the occurrence of widespread outbreaks of rat plague as well as to reduce the chance of infection spreading from rats to man. When an outbreak of human plague is imminent or has actually taken place, other measures will also be necessary in order to protect the community concerned and these will include such steps as preventive inoculation, the evacuation of people from infected localities or houses and the provision of adequate treatment for patients. All these measures against plague should, as in the case of cholera, be enforced intensively in the endemic centers of the disease in order to secure definite control over its incidence and later its eradication, if possible.

7. The necessary measures may broadly be divided into two groups, permanent and seasonal. The former include: —

(1) Construction of rat proof dwellings and rat proof grain stores and railway go-downs;

(2) Control over the location of certain trades and industries which attract rats and

(3) an improvement of the general sanitary condition of towns and villages.

All these measures are meant to keep down the rat population. We shall deal with them separately.

Rat-proofing

8. (a) *Dwellings.*—In the Netherlands East Indies, the authorities have promoted the construction of a simple type of rat-proof dwelling by means of type plans and grant of subsidies. This measure is said to have had considerable influence on the control of plague in that country. In the Cumbum Valley in Madura district of Madras Presidency, experiments were in progress for a number of years, under the auspices of the Indian Research Fund Association, and a type of hut, suited to village conditions, has been evolved. It costs less than Rs. 100 and has been shown by close observation to have remained free from rats for two years. The popularization of such a type of dwelling should prove helpful in the campaign against plague.

(b) *Grain stores.*—Rat-proofing of grain go-downs is of special importance. At least in certain provinces local authorities possess, under the Local Self-government Acts, power to regulate the storing of grain for sale to the public. They should use these powers to ensure that such grain stores are not located in congested areas and that they are rendered rat-proof. It will also be of advantage if suitable stores and retail shops can be constructed by local authorities and rented out to grain merchants. By combining the enforcement of law with the provision of properly constructed stores from public funds it should be possible to control the grain trade in such a manner as to reduce effectively the danger which it now constitutes in places liable to outbreaks of plague.

Storage of grain in private houses should also be controlled. In different parts of the country various types of bins and methods of storage are in use. It may not be possible to provide a single type suitable for use throughout the country; it is, therefore, suggested that provincial health authorities should, in consultation with their

local officers, prepare plans for a number of types of storage vessels and induce the people to use them.

The conversion of existing granaries into rat-proof stores should also be carried out on the lines approved by local health authorities.

(c) *Railway premises.*—it is equally important to provide rat-proof go-downs in railway premises. Grain and other material likely to attract rats are stored for varying periods at railway stations, thus-increasing the chances of plague infection.

In all grain stores for wholesale and retail sale and in railway premises it is essential that, in addition to rat-proofing, measures for the destruction of the rats that may be introduced in spite of all precautions, should also be carried out continuously. Local health authorities should make suitable legal provision for the enforcement of this measure and should ensure that it is carried out effectively.

Location and Control of certain Trades and Industries

9. Local authorities have power, under Local Self-government Acts, to regulate the location and the carrying out of a number of trades and industries which are likely to attract rats. For instance, the Madras District Municipalities and Local Boards Acts give to municipal and non-municipal health authorities the power to regulate a number of trades of which the following are examples: —

(a) Washing soiled clothes and keeping soiled clothes for the purposes of washing them, and washed clothes;

(b) boiling paddy, or camphor;

(c) melting tallow or sulphur;

(d) storing or otherwise dealing with manure, offal, blood, bones, rags, hides fish, horns or skins;

(e) washing or drying wool or hair;

(f) making fish-oil;

(g) making soap, dyeing, boiling or pressing oil, making bricks, tiles, pottery or lime;

(h) Manufacturing or distilling sago; manufacturing artificial manure;

(i) keeping a public halting place, choultry or other rest-house for travelers, a hotel, restaurant, eating house, coffee house, etc.;

(j) Preparing flour or articles made of flour for human consumption or sweetmeats;

(k) Selling grain or jiggery wholesale or storing grain or jiggery for the wholesale trade;

(l) manufacturing jiggery or sugar candy.

It will be seen that many of these trades, if carried on without due care, will provide abundant food to rats and will, therefore, help to increase their numbers. The location of many of these trades in densely populated areas should be discouraged, especially in regions where plague is endemic. If, however, these trades are permitted in such areas, due precautions should be enforced in order to keep down the rat population.

10. *Improvement of general sanitation.*—The throwing of garbage in public places encourages the breeding of rats by providing them.

with food. A general improvement in the sanitation of rural and urban areas will, therefore, be an important contribution to the campaign against rats.

Seasonal Measures

11. Temporary measures include (1) rat destruction, (2) a periodical cleaning of homes, (3) control of movements of goods, particularly grain, (4) preventive inoculation, (5) evacuation of infected houses or localities and (6) treatment of patients.

12. *Rat destruction.*—Of recent years the most effective method of rat destruction has been found to be through the use of cyanogens. It has been shown that fumigation of rat holes by cyanogens year after year constitutes an effective method of reducing the incidence of plague in endemic areas. Under the auspices of the Indian Research Fund Association cyanogens fumigation was carried out in cumbum Valley over a number of years in order to determine its value as an anti-plague measure. The Plague Advisory Committee of the Association, after reviewing the results in December 1940, came to the conclusion that cyanogens fumigation operations, systematically carried out in the infected and threatened villages during the previous six years, had been mainly responsible for the marked reduction in the incidence of plague in this endemic area. We, therefore, recommend strongly the adoption of this measure in all endemic centers of the disease.

13. *Periodical cleaning of homes.*—A periodical cleaning of the house, particularly during the weeks preceding the plague season in the locality concerned, is a salutary measure in areas liable to outbreaks of the disease. The turning out of the contents of the house and exposure to the sun of bedding, clothing, furniture and other articles will help to disturb the rat population and to kill off the fleas.

14. *Control of movement of goods particularly grain.*—The part that grain traffic plays in the transport of plague infection, from plague stricken areas to those which are free, is well known. In regions, in which the disease is endemic, an attempt should be made by the local health authorities to study normal movements of grain and to ascertain the areas to which it is ordinarily transported in each month of the year. When such information is available it should be possible, by administrative measures, to ensure that grain known to be emanating from infected villages is examined and dealt with properly (*e.g.* cyanogens fumigation) before being sent out. In this connection, the closest possible co-operation between local health and railway authorities will be necessary.

15. *Preventive inoculation.*—As in the case of cholera inoculation, the popularity of plague inoculation has steadily increased. The Director of the Haflkine Institute. Bombay, who is responsible for the manufacture and issue of plague vaccine for use throughout India, has pointed out that, in spite of a continued fall in the incidence of plague, the demand for plague vaccine has increased. When an outbreak of plague is imminent or when the disease is actually prevalent, preventive inoculation is the one measure which should be carried out with the greatest possible vigor.

16. *Evacuation.*—Evacuation of the residents from a house in which a rat fall has taken place and disinfestations of the house and its belongings constitute important measures against the disease.

Further, if rat falls occur in a number of houses in any locality evacuation of the whole area is desirable. It may, however, be pointed out that the procedure generally adopted for the removal of people from infected areas is, in many cases, unsatisfactory. Their removal should be accompanied by adequate measures to destroy rats and fleas in the personal belongings and other goods of these people in order to prevent the transmission of infection. Such disinfestations is, however, often carried out perfunctorily with the result that plague infection is conveyed, on occasions, to the newly occupied areas. Secondly, as plague usually occurs in the colder part of the year, a compulsory transference of groups of people from well-settled homes into temporary quarters is bound to create opposition unless the new premises provided for them afford reasonable comfort. This requirement has hardly been met on many occasions. Thirdly, the camps to which the people are removed are not often located sufficiently far from their original homes to prevent journeys to the infected locality being made surreptitiously at night. We consider it necessary to draw special attention to these facts because we feel that, if evacuation is to produce the intended results, it is essential to ensure the carrying out of the required measures on proper lines.

17. *Treatment of patients.*—Till recently, there was no specific treatment for plague and the efforts of the physician were mainly directed towards giving relief to the patient and to the keeping up of his strength in the fight against the disease. The manufacture of a potent serum has been attempted by more than one investigator in different countries. A few years ago, the Director, Haffkine Institute, prepared a serum which, on field trial, was established to be definitely more effective than the ordinary form of treatment. Sulphapyridin and sulphathiazole have also been found to be useful in the treatment of plague. Of the two, sulphathiazole is considered the better drug because its effectiveness is probably a little higher and its toxicity less.

6. LEPROSY

1. The subject of leprosy in India and its control was examined in great detail in October 1941 by a Special Committee, which was appointed by the Central Advisory Board of Health, and its report contains a large amount of valuable information which we have freely utilized in the preparation of this section.

The Incidence of Leprosy in India and its Geographical Distribution

2. Census enumerations of leprosy patients have always been serious underestimates of the real incidence of the disease. The latest available enumeration (for 1931) places the figure for India as a whole in the neighborhood of 150,000, an advance of about 50 per cent on the 1921 enumeration. On the other hand sample surveys carried out by specially trained medical men in different parts of the country have shown that, for the areas concerned, the actual numbers of leprosy patients are many times the figures recorded at the 1931 census. Basing its calculations on the results of these surveys the special Committee referred to above estimated that the number of cases of leprosy in the country "is probably at least one million". It should, however, be remembered that a high proportion of this total figure consists of non-infective cases, these being as high as

70 to 80 per cent in most parts of India. Even so, infective patients may well be in the neighborhood of a quarter of a million in the whole country.

3. The highly endemic areas of leprosy in India are certain parts of Western Bengal, of Orissa and of Madras. Broadly speaking, the incidence of the disease is high in a belt of territory covering the southern portion of the peninsula, including Cochin and Travancore, and the east coast of India. A belt of moderate incidence runs across Northern India along the Himalayan foot hills, while Central India also shows a moderate prevalence of the disease together with certain foci of higher incidence. In NORTH-WESTERN India, including parts of the United Provinces and the Punjab, Rajputana, Sind, Baluchistan, North-West Frontier Province, Gujrat and the northern part of the Bombay Province, the incidence of leprosy is remarkably small.

4. In the highly endemic areas its incidence may range from two to five per cent of the population. In restricted areas in such endemic regions the proportion of cases may rise to 10 per cent of the population while individual villages may show a rate as high as even "15 to 20 per cent. In the non-endemic regions of NORTH-WESTERN India, on the other hand, large areas may show no cases at all while the general level of incidence is stated to be as low as 0.01 per cent or one per ten thousand of the population.

5. The public health aspect of the leprosy problem in an area is determined not merely by the rate of incidence of the disease in the population but also by the relative severity and ineffectiveness of individual cases. Cases of leprosy are broadly divided into two groups, the "neural" and "lepromatous" types. The former constitutes the "benign" form of leprosy and, as pointed out by the International Leprosy Congress, 1938, "these cases give evidence of relative resistance to the infection or of relatively good prognosis as regards life although mutilation may take place Bacteria logically the skin lesions are typically but not invariably found negative by standard methods of examination, though the nasal mucosa may be found positive." The lepromatous type consists, on the other hand, of the "malignant" form of leprosy, "in which the patient is relatively non-resistant, has a poor prognosis and exhibits lepromatous lesions of the skin and other organs, especially the nerve trunks. Bacteriological examination usually reveals abundant bacilli." It is therefore the lepromatous case that is usually much more infective than the neural case. While for the country as a whole the proportion of lepromatous cases is estimated at about 20 per cent of the total number of leprosy patients, there are areas where the proportion of this severer type is as low as 4 per cent and others in which it rises even to 50 per cent. The Committee has stated that "it is unusual in India to find an area where leprosy is both very common and severe. In Bengal, Bihar, Orissa and in the north-east part of the country in general, leprosy appears to be relatively common and relatively mild. In the foot hills of the Himalayas and in the areas to the north west, leprosy is relatively rare and severe. In the south, *e.g.,* Madras, leprosy is very common but also more severe than in the north-east, though less severe than in the Himalayan foot hills." In estimating the importance of leprosy as a public health problem the rate of incidence and the

relative proportion of the lepromatous type should both be taken into consideration.

6. Two other aspects of the leprosy problem should also be considered in connection with a survey of the incidence of the disease in the country. These are (1) leprosy among beggars and (2) industry in relation to the disease.

The Problem of Beggars with Leprosy

7. Beggars with leprosy are found in varying numbers in a large number of towns and cities, in places of perennial pilgrimage and in all centers where pilgrims congregate periodically. The Special Committee has pointed out that, in Calcutta, there are about 1,000 beggars with leprosy, most of them having come from other provinces, and that the profession of begging has been organized by them to a high degree of perfection under a headman. Many of them are married to persons who are also suffering from leprosy and the quarters occupied by them are usually separated from those of the general population. In religious centers the common custom of giving alms to beggars and the frequent feeding by charitable persons constitute incentives which help to concentrate them in relatively large' numbers. The large majority of these beggars are leprosy patients. While a certain proportion of them are burnt out cases and are non-infective, the Committee point out that "the statement not infrequently made that almost all beggars with leprosy are not infective is not true."

Leprosy in relation to Industry

8. The Committee has thus briefly stated the problem: —

"During recent years some evidence has been accumulating to* show that the development of industry is probably having an influence on the spread of leprosy and the possibility of this increase must-be borne in mind. Leprosy surveys of industrial workers have been carried out in various parts of India and an incidence of between 1 and 2 per cent has often been found, and a considerable number of cases have been infective cases. The presence of these infective cases in the crowded *bus ties* and living quarters of industrial workers is a definite menace to the other workers and their families. The fact that the industrial population of India is largely migratory increases the menace to public health. Not infrequently in village-surveys one comes across patients with leprosy who attribute the disease to having been infected while working in industrial centers. Sometimes such a patient having contracted the disease in an industrial centre, will return to his village and introduce the disease there where it was not previously found".

The question of dealing with these two aspects of the leprosy problem will be considered later in this chapter.

Existing Anti-leprosy Work in India

9. Existing anti-leprosy work is being carried out largely by voluntary organisations although, in recent years, Provincial Governments have begun to show an increasing interest in the promotion of this branch of health activity

10. The Mission to Lepers, which was founded by Welles ley Bailey in 1875 with its first leper institution at Chamba in the

Punjab, is the largest agency engaged in anti-leprosy work in the country. At the time of his death in 1937 there were 32 institutions under the Mission in India and these housed 8,000 patients. Further, the Mission gave financial aid to 17 other institutions which provide for 2,600 additional patients. Besides those maintained by this Mission 16 other institutions are maintained by different Christian Missions. Lately Provincial Governments and even local bodies (district boards and municipalities) have started the establishment of in-patient accommodation for leprosy. Nevertheless, the Committee estimated that the total accommodation available for the segregation and treatment of patients of this disease was only about .14, 000 for the whole country.

11. Another organization which requires special mention is The Indian Branch of the British Empire Leprosy Relief Association, which was established in 1925 with funds derived from a public appeal by the Viceroy of India. This Association has actively helped in the organization and carrying out of leprosy research, the provision of facilities for special training for doctors in the diagnosis and treatment of the disease, propaganda and co-ordination, through its provincial branches, of governmental and voluntary effort in the campaign against leprosy.

Certain Points to be considered in Planning an Anti-leprosy Campaign

12. Certain points require consideration in connection with the planning of an anti-leprosy campaign. They include the following:—

(1) Although leprosy is a communicable disease its rate of spread is relatively slow in comparison with such diseases as cholera, smallpox, plague, malaria and tuberculosis.

(2) The exact mode of transmission of leprosy infection is not known but it has been recognized that prolonged and close contact between the infective patient and a healthy individual is necessary before the latter becomes infected. It has also been recognized that children are more susceptible to the disease than adults. A child born of an infective leprosy patient and removed at birth does not develop the disease. On the other hand such children, if not separated from their infected parents, acquire the disease in a large proportion of cases. Evidence has been cited to show that the rate of infection may be as high as 80 per cent. Adults similarly exposed to infection (for example the wife of an infective husband and *vice versa)* contract the disease to a much smaller extent, the proportion of those developing leprosy being only about 5 to 10 per cent.

(3)The infective patient may not often be easily recognized. Those in an advanced stage and with deformities may often be non-infective while others with no easily recognizable outward signs of the disease may prove, on close examination, to be infective. In a broad sense it is true that it is the more severe lepromatous type which usually possesses a high degree of infective power.

(4) Isolation of the infective patient is the one measure which is advocated by all leprosy workers throughout the world as the most effective method for controlling the spread of the disease. An anti-leprosy campaign must therefore place the isolation of infective patients in the forefront of its programme. The fact that the number requiring isolation in the country as a whole may well be about 250,000 and that the period of isolation necessary for individual

patients may extend to many months or even years makes the adoption, on a sufficiently wide scale, of this universally accepted method) of control by no means easy. This does not, of course, mean that no steps of definite practical value can be taken in this direction in the immediate future.

(5) The value of treatment as a preventive measure in leprosy is much more limited than in many other infectious diseases, in which a cure or an effective arrest of the spread of infection in the patient *(e.g.,* tuberculosis) may be established and the individual rendered innocuous as a transmitter of the disease. Treatment has, however, its place in the anti-leprosy campaign and we shall refer to it later

OUR RECOMMENDATIONS

13. If the development of anti-leprosy work is to proceed on sound lines the plan should, in our opinion, make provision for: —

(a) The investigation of leprosy as a public health problem in local areas;
(b) The organization of curative and preventive measures in those areas in which the prevalence of the disease is shown to be sufficiently high to require such measures,
(c) The stimulation of voluntary effort to supplement the work accomplished by the public authority and
(d) Education of the public in order to secure their intelligent co-operation in the anti-leprosy campaign.

14. As an essential step towards the attainment of the purposes indicated under (a) and (b) above, provision will have to be made for special training in the diagnosis and treatment of leprosy at the undergraduate and postgraduate-stages of medical education and for the active promotion of leprosy research. It will be recalled in this connection, that in the chapter on professional education we have specially drawn attention to the need for such provision, and in order to provide post-graduate teaching and research facilities of a high order, we have recommended the creation of a Central Leprosy Institute in an area with abundant suitable clinical material and have further suggested that the Central Government should assist in its establishments and maintenance. We shall deal with the organization and functions of this Institute in some detail later in this chapter.

15. In order to promote anti-leprosy work on the lines indicated under (a) to (d) above we put forward the following proposals for the short-term programme. While recognizing that they can only be considered as the first step towards the solution of the leprosy problem, the magnitude of which we fully realize, we believe that they will constitute if implemented a substantial advance on the measures that are now in force for the control of the disease.

(1) The creation of Provincial Leprosy Organisations.
(2) An increase of the existing provision for institutional treatment out-patient and in-patient.
(3) Development of group isolation colonies.
(4) Substantial financial help to voluntary organisations engaged in anti-leprosy work.

The Provincial Leprosy Organization

16**.** We have already mentioned that by far the largest proportion of anti-leprosy work in the country is now being carried on under the-

auspices of voluntary organisations. While fully recognizing the value of voluntary effort in this and in other fields of health activity, we must emphasize the view that the primary responsibility for taking: adequate measures against the disease should rest on Governments. We find that we are supported in this opinion by the Fourth international Conference on Leprosy at Cairo in 1938, which pointed out. that the control of leprosy should be "the inescapable responsibility of the Governments concerned". We therefore consider it essential that, as a preliminary step towards organizing provincial anti-leprosy work on sound lines, a leprosy organization should be created at the headquarters of each province in which the disease is a definite public health problem. This leprosy organization should be an integral part of the provincial health service. The special Committee has pointed out that, in the past, when provincial authorities have shown some interest in, - and responsibility for, anti-leprosy work "they have often done so in a half-hearted way. They have appointed a very small poorly paid and sometimes poorly qualified staff". The Committee went on to say that in the Philippine Islands and Japan "leprosy workers are Government servants—well qualified, well trained, specially chosen for the work and given excellent status, pay and prospects, at least equivalent to those of similar men in medical and public health departments". We desire to see a similar policy followed in India also. The provincial leprosy organization we are recommending (details will be found in appendix 10) will be controlled by a Provincial Leprosy Officer attached to the establishment of the Director of Health Services. This Officer should have had, besides special training in leprosy, considerable experience in organizing anti-leprosy work in its different branches, including survey, out-door and in-patient treatment of leprosy patients and the development of measures for group isolation of infective patients through village colonies. He will be assisted by a suitable number of assistants to promote preventive and treatment work on the lines indicated above. Epidemiological field investigations in close association with laboratory research form an essential part of an anti-leprosy campaign on sound lines. Provision for these should therefore form a part of the proposed provincial organization. The suggestion we have made (see Appendix 10) for the composition of such an organization will, of course, be subject to the needs of individual provinces and should be modified in relation to them.

An Increase in the Existing Provision for Institutional Treatment, Out-patient and In-patient

17. It seems appropriate to begin with some remarks regarding the value of leprosy treatment. Special treatment for the disease is through the administration, usually by injection, of some preparation of Hydnocarpus wightiana or chauhnoogra oil. Additional treatment medical and surgical, is also given to deal with special conditions as they arise. About twenty or twenty-five years ago striking results were claimed as the result of Hydnocarpus oil treatment and great expectations were aroused in regard to the control of the disease through a wide expansion of treatment facilities. These expectations have not, however, been fulfilled because it became recognized after some years, that this treatment has but limited value in arresting the progress of the disease. It has been found that, in many of the "benign" cases, the improvement noted in treated patients often takes place in untreated cases also. Further, Dr. R. G. Cochrane, who has

had considerable experience of anti-leprosy work in this country, has pointed out in a memorandum submitted to us that "even with modern methods of treatment about 60 to 85 per cent of all persons who suffer from lepromatous leprosy do not recover sufficiently for them to return to work, and the great majority of these remain infective". Treatment has therefore a limited value. While recognizing this, we still hold that the provision of treatment facilities has a place in the campaign against leprosy. Apart from such relief as it may give, the co-operation of patients and their relations cannot be secured in the measures against leprosy without providing treatment. By the establishment of treatment centers it will be possible to attract patients and then, through investigation in their homes and through the information supplied by them, to discover the extent of leprosy infection in the area concerned. Educational propaganda and other preventive work can also be carried out more effectively when such co-operation is available. Moreover, surgical and medical treatment in respect of various conditions as they arise affords some relief to the patient even if the progress of the disease cannot in all cases be effectively checked. The provision of treatment facilities should therefore definitely forms a part of the anti-leprosy programme.

Out-patient Treatment

18. At present such treatment is available in (1) leprosy clinics in association with general hospitals, (2) special leprosy clinics and (3) the out-patient departments of leprosy hospitals. Of these the Special Committee considered that the work done at the clinics under category (1) was in many cases of poor quality because the doctors concerned lacked special training in leprosy and because insufficient attention was paid to this disease owing to other heavy duties in the hospital. Special leprosy clinics are generally under the charge of doctors trained for the diagnosis and treatment of leprosy but these medical men are often ill-paid and entrusted with the charge of too many centers to give effective attention to any of them. The outpatient departments attached to large leprosy institutions are, in the opinion of the Committee, providing the best form of treatment partly because the doctors in charge are specially trained for the work and partly because the laboratory and other facilities of such institutions can, to some extent, be made available to those who are treated in the out-patient department.

19. The leprosy clinic should perform the dual role of spreading remedial and preventive care among the people in the same manner as the tuberculosis clinic in the campaign against that disease. In order to ensure that these functions are performed satisfactorily it is essential that the medical officers in charge of all leprosy clinics, whether they work independently or in association with hospitals, should have had special training in the diagnosis and treatment of the disease. Further, there should be provision for follow-up in the homes of the patients. Their contacts should be persuaded to attend the clinic for examination and suitable treatment and advice, where necessary. We have already pointed out that children are much more susceptible to leprosy infection that adults and every effort should be made, during home visits by the doctor and the nurse, to impress this fact on the people and to secure, that, as far as possible, children are safeguarded from possible infection by the carelessness of infective patients.

20. We recommend that a start should be made by providing a properly equipped and staffed leprosy clinic in association with every hospital we have proposed at the secondary health centre in those parts of the country in which the prevalence of the disease justifies such provision. In addition, as these clinics are most needed in close proximity to the areas in which the incidence of the disease is high, the provincial leprosy organisations we have recommended should survey the needs of such areas and formulate schemes for the provision of an adequate number of such clinics. In many of the highly endemic centers of leprosy a certain number of these clinics already exist and the immediate need is to staff and equip them properly and improve the quality of the work they have been doing.

In-patient Accommodation

21. Existing provision for the treatment of persons suffering from leprosy as in-patients in hospitals is, as we have pointed out, limited to about 14,000 beds while infective cases requiring isolation may well be about a quarter of a million. If an effective control is to be exercised over the spread of the disease it will be necessary to provide for the segregation of the vast majority of infective cases, many of whom may require, because of the severity of their illness, admission and treatment in a leprosy hospital. Indeed the pressure on existing hospital accommodation is so high that "practically every leprosy institution in the country is full, and thousands of applications have to be refused every year for lack of accommodation". The need for a considerable increase in the existing provision for the in-patient treatment of the disease is therefore evident. We propose that, in the first five years of our programme, an additional 14,000 beds should be provided to supplement the existing accommodation and that, in the next five years, an equal provision of another 14,000 beds should also be made.

22. The Special Committee's remarks regarding the lines on which leprosy institutions should be developed are pertinent and are quoted below.—

"Local authorities and Provincial Governments have in the past tended to build leprosy institutions in or near towns and somewhat on the lines of general hospitals, with large wards housing numerous patients and with limited land. Missions have however, built their institutions chiefly in rural areas on larger pieces of land and the patients have been housed in small numbers in small rooms or else in cottages.

"The disadvantages of the hospital type of institution in or near a town have long become apparent, and the modern tendency is to develop leprosy institutions more on colony lines and well outside towns, the patients often being housed on the cottage principle."

23. Two types of institutions are needed. One is for the isolation and active treatment of infective patients and the other is for those who are so disabled through crippling and deformities as to require institutional care. The latter are generally non-infective and there fore not dangerous from the point of view of spreading the disease. But they are often homeless, poor and unable to take care of them selves and the provision of asylums for such incurables is dictated by humanitarian considerations. We are not in a position to indicate how the proposed extension of hospital accommodation should be.

distributed between these two types of patients. We have not even attempted to suggest in what manner the new beds should be allocated between the provinces. We have little information before us regarding the incidence of the disease in different areas and the relative proportions of active infective cases and incurables in these areas and, in the absence of such information, we must leave it to the Provincial Governments concerned to work out, in mutual consultation, where necessary, the extent of provision to be made in their respective territories. In developing such hospitals it may be of advantage for neighboring provinces, *e.g.,* Bihar and Orissa, to pool the available resources and establish joint institutions to serve the needs of their peoples.

Development of Group Isolation

24. The special Committee has pointed out that, in the past, the isolation of leprosy patients in their own homes was widely practiced by the people in India but that the tradition has gradually weakened in the country as a whole and that it survives, as an effective measure only in one or two Isolated parts of India, an example being the kangra valley in the Punjab. Although attempts have been made to revive the practice the Committee considers that the results have been disappointing and that "from the experience so far gained, it cannot be said that home isolation holds out much prospect of being widely and properly practiced".

25. On the other hand the Committee advocates the investigation of the possibilities of group isolation. In this connection certain points to remember are that the period of isolation will be long, perhaps years, that provision should be made for medical care although it may not be of a very high standard, that the scheme if it is to be widely adopted should be sufficiently cheap to suit the economic level of the country and that provision should be made to promote corporate life in the isolated community and to enable the more able-bodied members of it to work and contribute towards the maintenance of the colony. We give in this connection, extracts from the Public Health Commissioner's annual report for 1936 as Appendix 18 in which are described a successful experiment of this nature at Uzuakoli in Africa and a more modest rural experiment in the Central Provinces, both of which were under the auspices of Missionary bodies. Prom a memorandum submitted to us by Dr. Dharmendra, who is the Leprosy Research Officer under the Indian Council of the British Empire Leprosy Relief Association, we understand that a large-scale rural leprosy isolation scheme will be shortly inaugurated in Bankura district of Western Bengal, where the disease is widely prevalent. He says, "It is essential to work in a selected area of a reasonable size, try to isolate almost all the infective cases, and watch over a number of years the effect of this isolation on the spread of the disease in the area. The British Empire Leprosy Relief Association, Indian Council, is proposing to organize such a centre in connection with its Leprosy Investigation Centre, Bankura. The area under the Bankura Investigation Centre appears to be specially suited for this kind of work, since in this area we possess definite information about the incidence of leprosy for the past 8 years. In this area we definitely know that for all these years there has been no tendency for the disease to decrease. If the isolation of a large majority of infective cases in this area is followed by a decline in the disease we can be

sure that the decline is attributable to isolation." The results of this experiment will be awaited with interest.

26. Individual schemes for group isolation can perhaps be developed with advantage for a number of villages in which leprosy is prevalent. Such schemes will require careful working out taking into consideration local conditions, including the habits of the people. That they will occupy an essential place in the anti-leprosy campaign is unquestionable because they alone can provide for the isolation of the large numbers of patients requiring segregation. We consider experiments on these lines so important that we have suggested an annual expenditure of three lakhs on the development of group isolation during the first ten years.

Financial Help to Voluntary Organisations

27. Voluntary agencies, particularly missionary bodies, have so far •contributed more to the development of anti-leprosy work in India than public authorities. We have recommended a wide expansion of measures against the disease which will be the responsibility of Governments and of local health authorities. We have no doubt that, even with such expansion, it will be necessary for voluntary effort "to continue unabated in this field and have therefore suggested provision to the extent of 187.5 lakhs during the first ten years "to subsidies such efforts.

The Central Leprosy Institute

28. Our proposals for the organization, maintenance and control of this and of similar institutions for certain other diseases have been set out in the section dealing with post-graduate medical education. Its function will include the training of leprosy workers, the active promotion of research in this subject and the development of an information service providing the latest information regarding the treatment of the disease and anti-leprosy work in general for the benefit of Governments and organisations interested in leprosy in India. It should assist Provincial Governments in the development of their campaign against the disease, if so desired. It should be located in an area which provides suitable clinical material in abundance and should have, attached to it, a large leprosy hospital together with its out-patient department and a group isolation colony. The development of clinical research and field investigations, as distinct from laboratory studies, should be an essential part of its duties.

The Leprosy Problem among Beggars

29. The two problems of mendicancy and of leprosy in this class of persons are so closely connected that it is doubtful whether the question of leprosy can be isolated and dealt with satisfactorily. The subject of mendicancy goes beyond the scope of the enquiry which we have undertaken. Yet some attempt to control leprosy in this class of people is urgently required. We have already referred to the beggars with leprosy in Calcutta. While their voluntary living together in quarters isolated from the general community does minimize to a large extent the possibility of the spread of infection except among themselves, a disquieting feature is that many of them are married and are rearing families so that, with the high susceptibility of children to the disease, the group is gradually becoming infected in an increasing degree as time goes on. Moreover

in Calcutta and in all other centers where beggars with leprosy concentrate, *e.g.,* places of perennial pilgrimage, it is likely that commingling takes place to some extent between them and those belonging to the lower economic strata of the general population. Such contact is bound to help the spread of the disease. The complicated nature of the problem, including its local characteristics in specific areas, makes it desirable in our opinion to leave it to provincial health authorities to work out plans for anti-leprosy work among this class of people, taking all local circumstances into consideration.

Industry in Relation to Leprosy

30. Here again the problem can be dealt with satisfactorily only by taking local circumstances into account. In the first place provincial leprosy organisations should attempt to estimate the extent of incidence of leprosy among industrial workers in the different industrial centers included in their territories. Next, wherever it is shown to be prevalent, measures for the detection, isolation and treatment of all infective cases should be undertaken. It is essential to ensure that such infective patients are not permitted to live along with other workers in quarters, which are often overcrowded. If a local organization to deal with leprosy in the general population has been develop eg, the facilities which are available there can of course be utilized for industrial workers also. If such facilities do not exist, special" provision will have to be made if the prevalence of leprosy among industrial workers is sufficiently high to justify it. If not, the few- cases to be dealt with can perhaps be best provided for by transfer ring them to the nearest group isolation colony.

Legislation

31. The Special Committee has discussed in its report (extracts; from the report are given in Appendix 19) the defects of existing legislation regarding leprosy in British India and has pointed out the need for providing a comprehensive Act, which will modernize the existing law and deal with the problem in the country as a whole. It has also indicated certain principles on which such legislation should be based. We recommend that the suggestions of the Committee should receive the early attention of Governments in the country.

7. VENEREAL DISEASES

Introduction

1. The incidence of venereal diseases in India is unknown. in our review of the venereal diseases problem in the previous volume of the report, we have already referred to a survey made by Sir John Megaw, a former Director-General of the Indian Medical Service of the incidence of syphilis and gonorrhea in this country. For reasons already indicated there, the value of an estimate based on this survey must be considered to be strictly limited. Nevertheless, the rate of total incidence for these two diseases which he calculated, namely, 37 per thousand of the population, is sufficiently high to point to the urgent need for fuller investigation as well as for the starting of a campaign against them on as extensive a scale as circumstances would permit. Their importance from the point of view of producing sickness and incapacitation cannot be over-emphasized. Both syphilis and gonorrhea are responsible for much blindness. Of the two, syphilis is the more important. If not treated in time

and adequately it produces degenerative changes of a varied character in the internal organs of the body and, in a certain number of cases, it also causes the condition known as the general paralysis of the insane. The disease is transmissible from parent to offspring and is responsible for a considerable proportion of the abortions and premature births that take place. Syphilis accounts also for a large amount of mental deficiency. Gonorrhea, in its turn, contributes "to ill-health through joint troubles and various conditions affecting the genitourinary organs in both sexes. In women it may produce sterility.

2. Gonorrhea and syphilis are infectious diseases and the main 'lines on which action should be taken against them would therefore seem to be the same as those adopted against other communicable diseases, namely, (a) notification of their occurrence and (b) control of the spread of infection from persons who are in an infective stage to those who are healthy. There are, however, certain special features in respect of these two diseases which would necessitate a modification of the normal procedure adopted for the control of other infections. These arise from two causes. Firstly, the social stigma associated with venereal diseases results in the desire for concealment on the part of those who suffer from them. Secondly, as their spread is mainly through sexual intercourse, the measures for control must differ, to some extent at least, from those adopted to prevent the transmission of such diseases as malaria, smallpox, cholera or tuberculosis.

Notification

3. While compulsory notification has been recognized as a measure of great importance in dealing with infectious diseases in general, such a measure would probably fail to achieve the purpose in view when applied in the case of venereal diseases because of the widely prevalent desire, on the part of the patients and their relatives, to conceal their occurrence. The British Parliament, when sanctioning for the first time in 1916 a comprehensive scheme for a campaign against these diseases, took this view and did not include compulsory notification as one of the measures to be adopted by health authorities. It was held that, by the provision of adequate facilities for tree and confidential treatment, sufficient response could be evoked from the people to make the fight against these diseases effective. This assumption has in the main been fulfilled. Between 1917, when the first free clinics were opened, and 1940 the number of such treatment centers in England and Wales rose to 188. It is true that, in the absence of the enforcement of compulsory notification, the numbers of cases treated in these clinics can provide only an estimate of the probable incidence of the infections in the population. It seems however fairly safe to assume that, with the continuous education of the people in regard to the dangers associated with these diseases, the annual numbers treated for newly acquired infection should increasingly become reasonably correct indices of the prevalence of syphilis and gonorrhea. Judged by such figures their incidence decreased by about 70 per cent between 1917 and 1940. Additional evidence of a confirmatory nature is a reduction in the mortality due to congenital syphilis to the extent of about 62 per cent during the same period. It is understood, on the other hand, that in Denmark, Holland, Norway and Sweden

notification and treatment are both compulsory and that the incidence of syphilis has in consequence been very considerably reduced. It is argued that, in order to ensure complete treatment so as to render the patient non-infective and to extend such treatment to as wide a circle of patients as possible, the element of compulsion is essential. This may be so. We feel, however, that the introduction of compulsory measures represents a stage, which can be-reached only after a period of persuasive propaganda and the provision of adequate free treatment facilities have awakened in the public mind a recognition of the supreme importance of stamping out venereal diseases and have created a demand for the enforcement of the strictest possible measures of control. In these circumstances we believe that, in organizing a campaign against these diseases in India, it is not desirable to introduce compulsory notification at this stage

The Organization of Control Measures

4. The measures which are necessary for the control of these diseases may be divided into two broad groups, namely, (1) those which provide the best available forms of medical care, preventive and curative and (2) those which are designed to discourage pro miscuity and to control prostitution.

Provision of Medical Care, Preventive and Curative

5. The measures required under this head include: —

(1) free treatment to all persons seeking such treatment;

(2) facilities, without payment of fees, for personal prophylaxis;:

(3) adequate diagnostic facilities;

(4) the creation and maintenance of a follow-up service and

(5) Education of the people in regard to the spread and control of these diseases.

The sequence in which these measures are set out is not meant to suggest any priority in regard to their implementation. The aim should, indeed, be to promote as far as possible their simultaneous development. For instance, the provision of facilities for free treatment and personal prophylaxis is likely to be of little value unless an intensive educational effort organized at the same time helps to promote a desire in the people to avail themselves of such facilities. The establishment of adequate laboratory services to ensure the correct diagnosis of these diseases is essential for the organization of the campaign on sound lines. The proposed follow-up service is intended to carry into the homes of the people the preventive care which forms a fundamental part of the fight against these diseases, and should therefore be established from the very beginning.

6. It seems to us that a special organization for dealing with venereal diseases should be established in each province as a part of the provincial health department. The creation of the post of a Provincial Venereal Diseases Officer, with suitable assistants, on the establishment of each Provincial Director of Health Services is necessary. It should be the duty of this officer to plan the campaign against these diseases and to promote the development of the required' services in close collaboration with the other branches of health administration. Certain suggestions for the composition of this organization at the provincial headquarters are given in Appendix 8.

These will of course be subject to such variations as the requirements of individual provinces may necessitate. For the provision of free treatment and of facilities for personal prophylaxis we recommend that the following provision should be made during the short-term programmed.—

(1) The establishment of venereal diseases clinics in association with the main general hospitals at the headquarters of the province, of each district and of every secondary health unit. We suggest that, m addition, such treatment facilities should be extended to each of the 8.0-bed hospitals we have recommended for a group of primary units and to the dispensary attached to each primary health centre, as soon as circumstances permit. A word about personal prophylaxis seems desirable. An individual, who has already been exposed to these infections, can be protected against them within the first few hours after such exposure, by certain relatively simple prophylactic measures. At each of the centers of treatment we suggest that" facilities for personal prophylaxis should also be made available.

Diagnostic Facilities

(2) Diagnostic facilities should be provided in the public health laboratory at the provincial headquarters and in the regional laboratories, the establishment of which we have recommended in the section dealing with medical research. In view of the importance of helping the fight against these diseases to the greatest possible extent, we recommend that such facilities should be made available, free of charge, not only to public institutions dealing with these diseases but also to all private practitioners.

Special Training for Doctors

7. The number of doctors who have had special training in the diagnosis and treatment of venereal diseases is, at present, extremely limited. The proposed expansion of treatment facilities will be possible only with the production of a sufficient number of doctors with such specialized training. At the headquarters of a number of provinces venereal diseases clinics have been functioning for some time. In some of these provinces such clinics exist in association with a certain number of the larger district headquarters hospitals also. The clinics at the provincial headquarters and such of the clinics in the districts as may be considered suitable should be organized, as soon as possible, to give special training in these diseases. Such training should be made available not only to doctors in public service but also to private practitioners.

The Creation and Maintenance of a Follow-up Service

8. Here, as in the case of tuberculosis, a follow-up service to establish contact with the homes of the patients is of great importance. Such a service can considerably help the campaign partly by encouraging patients to carry out the preventive measures they have been advised to adopt and partly by securing, through persuasion, the examination, at the special clinics for venereal diseases, of the contacts of such patients and their treatment, where necessary. The public health nurse will have to undertake the duties in connection with the home visiting programme, in addition to the functions she will perform in other fields of health activity. In the larger cities, where the incidence of these diseases may be definitely higher than in the country as a whole, it may be necessary to employ special workers to undertake

home visiting. It is believed that this duty can, with advantage, be combined with rehabilitation work to which we shall refer later. For this widened sphere of activity it seems desirable to employ a hospital social worker in the place of the public health nurse. We have indicated; in the chapter dealing with professional education, the nature of the training the social worker will receive and of the duties she may be expected to perform.

Two other Measures

9. Two other measures which have been found to be useful in England in the campaign against venereal diseases may also be considered here. These are the prohibition of treatment of these diseases by all except those who possess a registrable medical qualification and the restriction of advertisements regarding specific remedies and other forms of treatment. The purpose in view is to ensure that the patients concerned should receive the best forms of treatment which the latest developments in medical science can make available to them and to exclude quacks and their spurious remedies from the held altogether. The imposition of these restrictions on the treatment of venereal diseases has its justification in the fact that, in the campaign against them, the quack and his methods of treatment are likely to play an even more disastrous part than in the case of other diseases. We therefore think that only persons holding registrable qualifications should be permitted to treat venereal diseases in India also and that no advertisements regarding drugs or forms of treatment for these diseases should be permitted, except those which are approved by the Provincial Ministry of Health. A minute relating to this by one of us (Mr. N. M. Joshi) is appended at the end of this section.

Measures designed to discourage Promiscuity and to control Prostitution

10. Measures designed to discourage promiscuity in the community and to control prostitution are obviously more difficult to devise and enforce than the medical measures we have recommended in the preceding paragraphs. Education in a wide sense of the term, so as to promote the growth of the individual's moral sense and of his responsibility towards himself and the community, and sex education intended to create a correct appreciation of the problems of sex relationship and to impart knowledge regarding the spread of venereal diseases and the dangers that arise from them, must together provide the conditions essential to secure the success of any attempt to control indiscriminate sexual intercourse, whether it be in the restricted field of prostitution or outside it. The formulation of proposals to deal with education in its wider aspect falls clearly beyond the scope of this report. Even in respect of the more limited sphere of sex education we propose to make only a few remarks. The consensus of informed opinion seems to be that such education should start in early childhood and that the fundamental facts relating to sex should be given to children without the emotional color with which persons at older ages are likely to envelop the subject. On this background of factual knowledge, it will be possible to build a super structure of moral and ethical ideas in regard to sex relationship in the developing mind of the adolescent boy and girl. Both parents and teachers should, therefore, be in a position to give sex education

to children. The need for their collaboration in the task becomes emphasized when it is remembered that, at the adolescent stage, the reaction of the boy or girl towards sex education will largely be influenced by the background of discipline and culture which the home and school environments have already provided for the individual. We see, therefore, no short cut to the attainment of a desirable standard of universal sex education in the country. A beginning should be made by providing such instruction to teachers in training schools and colleges and, through them, to school children and college students. The sex education of adults can perhaps be attempted as a part of the programme of adult education. The successive stages of the postwar scheme of general education should, as it proceeds, be able to lay increasing emphasis on sex education also, the content and quality of the instruction given to different sections of the student population being varied according to the age and general receptive level attained by these sections.

Prostitution

11. Prostitution plays an important part in the spread of venereal diseases. A prostitute seldom escapes infection and she generally communicates it to a certain number of men who, in their turn, may infect other women including their own wives if they are married. Control of prostitution is therefore a most important measure in the campaign against venereal diseases.

12. Prostitution constitutes in itself one of the major social evils in all countries. Its underlying causes are complex and it is not easy to deal with them. Prostitution flourishes most in the larger urban centers. In the fight against it we consider it important to direct the attack on those, male or female, who are responsible for the maintenance of brothels and for the exploitation of the unfortunate prostitute as well as on the victims of such exploitation. We gather that, in many of the larger towns and cities, establishments under such appellations as "Turkish baths" or "massage institutions" are in existence, many of which are really houses for prostitution. We understand that an adequate definition of the term "brothel" is necessary in order to facilitate the enforcement of the law against such institutions and their keepers. Such a definition should be comprehensive enough to include establishments which, under other names, seek to serve the same purpose. Severe penalties should be prescribed for the keepers of such institutions and an attempt should be made to deal severely, under the law, with the landlords who permit the use of their premises for this purpose.

13. As regards the prostitute, provision should be made, where required, for appropriate medical treatment until she is cured or at least rendered non-infective. Measures for her re-education and return to the normal mode of life are equally necessary. In a large proportion of cases girls are lured into this unfortunate way of life partly as the result of poverty and partly due to the temptations to which they are exposed by their exploiters. A rehabilitation programme will have to provide not only for their general education, as in many cases they may be illiterate, but also for moral and vocational training so that they may be able to turn over to a new mode of life. The possibility of establishing rescue homes and rehabilitation houses in the larger cities requires serious consideration. While both types of institutions should play their part in the rehabilitation campaign, they

do not serve the same purpose. The rescue home is meant to provide, as its name implies, a temporary shelter to those who are removed from the prostitution houses. The provision of such homes seems to-be essential if brothels are to be suppressed by the enforcement of the law, partly for humanitarian reasons and partly to protect the public against the effects of letting loose the unfortunate inmates of these brothels. In the rescue home provision should be made for a detailed medical examination of the women admitted, in order to determine whether they are suffering from venereal diseases or not. Those who are should be persuaded to go into the rehabilitation house which we shall describe presently. The function of the rescue home should be mainly educative, while its atmosphere should be one of sympathy and of moral suasion. The relatively younger women, who have not yet become hardened prostitutes, are the persons who are likely to be benefitted by the ministrations available at the rescue home. Those who have acquired venereal diseases will require prolonged stay and treatment and it is therefore better for them to be removed to a separate institution, the rehabilitation house. Many of the women requiring such treatment are also likely to have been long inured to a life of prostitution. We are suggesting a separation of these two classes among the unfortunate victims of this social vice because we believe that, even from the point of view of re-education and of return to normal life, such separation will be of advantage to the less hardened type of prostitute.

14. The rehabilitation house should provide the best medical aid that can be given for the treatment of the diseases. it seems therefore desirable that the rehabilitation house should be developed in association with a well conducted venereal diseases clinic. Such association has also the advantage that, in addition to the provision of medical aid, the social workers attached to the clinic will be able to help in the rehabilitation campaign.

15. In the early stages of our programme against venereal diseases, admission to these institutions will have to be on a voluntary basis. Religious and other organisations interested in social welfare can find here a fruitful field of activity in persuading such women to enter the rehabilitation house and remain there sufficiently long to be benefitted by the medical care and other forms of service they will render. The social workers attached to the clinic can also assist in, this work.

16. We would, however, emphasize that, both in the rescue home and in the rehabilitation house; the atmosphere should not be such as to make these women feel that they are objects either of pity or of constant moral supervision for reclamation to normal life. Such an attitude on the part of the management of these institutions is likely to antagonize them to the efforts made to improve them. What is required is that their confidence should be won and there is perhaps no better way of disarming their fears and suspicions than by according them the same consideration and treatment as are given to women in ordinary life. The prostitute is usually treated with little civility by the general public and her reaction to such behavior is naturally one of hostility. She will therefore, respond more readily to an attitude which places her on a plane of equality with her sister in ordinary social life. Side by side with such treatment there should be ample provision for educational work and recreational

facilities as all these will enable the women to turn their back on the past and to begin a new life.

17. While efforts for the education and rehabilitation of the prostitute must have a prominent place in the campaign against these diseases, a raising of the economic status of women in general and the provision of opportunities, on as large a scale as possible, for their vocational training and subsequent employment will be equally necessary if the root causes of this social evil are to be adequately controlled. Even with such measures there will remain a certain number of unfortunate women, who are psychopaths and feeble-minded persons and are, therefore, unable to learn and practice any useful form of employment and probably prefer to continue making their living through prostitution. This small class will require more prolonged stay and education in the rehabilitation institutions we have recommended. A certain proportion of them may, through sympathetic handling and cultural training, become re-educated into the normal mode of life.

Minute by Mr. N. M. Joshi

Mr. Joshi holds that application of legislation providing treatment of venereal diseases by anyone except those who hold registrable qualifications, should be enforced in provinces and areas only when a sufficient number of persons holding registrable qualifications are available within a reasonable distance from the residence of patients

8. HOOKWORM DISEASE

1. In the volume dealing with our survey of health conditions in India we have already indicated the mode of spread of hookworm and have described briefly the results following a heavy infestation of man's intestine by this worm. It produces its harmful effects on the human host by the loss of blood it cause through feeding on him, by the state of irritation of the bowels which it produces and the resulting disturbance of the digestive function and by the secretion of a poisonous substance which prevents clotting and thus promotes bleeding. The revitalization it causes to the person concerned helps to make the chance of other infections being taken up, e.g., tuberculosis, much greater. Among certain groups of the population of many countries hookworm infestation is practically universal and the intensity of such infestation in individuals is high. Such groups-are generally backward in respect of social progress and, as pointed out in the 1917 report of the International Health Board of the Rockefeller Foundation, the cumulative effects of the disease on them—physical, economic, intellectual and moral—may go far towards explaining the retardation of their progress.

2. The disease is widely prevalent in India. The labor populations of plantations in Assam and South India are heavily affected as well as the general population of certain parts of Travancore, Malabar and South Kanara. Varying intensities of infestation are found in the provinces of Bengal, Bihar, Orissa, and the eastern portion of the Central Provinces, some parts of the United Provinces and the Punjab and on the east coast of Madras. The North-West Frontier Province, Rajputana. Sind, Kathiawar, Central India States, Hyderabad (Deccan) and Mysore State are practically free.

3. The proposals we have set forth in this report for ensuring adequate provision for night soil conservancy in rural and urban areas will, if implemented, constitute an important step in the control of hookworm disease. Soil pollution through human excreta and the habit of walking barefoot constitute the two main factors involved in the spread of the disease. What is therefore needed is that people should be taught how to render these factors inoperative. The health education campaign, which we hope will be conducted in the schools and colleges and among the general population as an essential part of our programme, should help materially towards this end. As a long-term measure we feel that the development of our health programme will suffice to solve the problem of hookworm disease. In the meantime, as heavy infestation exists in certain groups of people, it seems necessary to institute prompt and energetic measures among these groups. Mass treatment by the administration of the appropriate drugs, the early development of a system of night soil conservancy on lines suited to meet local conditions and education of the people in the modes of spread of this disease and in the measures to be adopted against it should be carried out on as large a scale as possible in the areas concerned.

9. FILARIASIS

1. Filariasis is widely prevalent in certain parts of India where a hot and humid climate favors the breeding of the special types of mosquitoes, which are responsible for its transmission. The disease leads to the permanent swelling of the legs and of certain other parts of the body besides causing recurring attacks of fever and inflammation of the lymphatic system. Although it does not cause death, it is responsible for a considerable amount of preventable suffering and disability.

2. Bengal is the most heavily affected province in India. The incidence of filariasis is high in the western districts of this province and its intensity gradually decreases eastwards and northwards. The Chittagong Hill Tracts and the northern districts of Jalpaiguri and Darjeeling are free. In Assam the disease is present in many districts although its intensity is lower than in Bengal. In Bihar its incidence is relatively high in the Gangetic plain and in Orissa in the coastal districts. In Madras areas of moderate prevalence exist in the districts of Tanjore, Kistna, Godavari and Vizagapatam and in Saidapet near Madras City, while the coastal tracts of Malabar and South Kanara districts and of the Indian States of Travaneore and Cochin show areas of high incidence.

3. Filariasis affects the health and well being of large numbers of persons living in endemic areas. Extended research has failed to produce a satisfactory cure for this disease. In view of the remarkable results that modern scientific developments have been able to achieve in the treatment of various diseases, there is every reason to hope that a cure will be found for filariasis, which has remained so far a challenge to workers in tropical medicine. The only effective measures against the disease known at present are those which are concerned with the control of the carrier species of mosquito. The organization we have recommended for anti-mosquito measures in the section dealing with malaria should direct' its attention, in the endemic centers of filariasis, to the carriers of this disease also and should attempt to secure an effective reduction in the types of mosquitoes.

10. GUINEA-WORM DISEASE

1. Guinea-worm disease is widely prevalent in certain districts of the N.-W. F. Province while its incidence is relatively low in the Punjab. The Rajputana desert is free but many of the States in Rajputana and Central India contain heavily infected areas. In the Central Provinces, Bombay Presidency, Nizam's Dominions and Madras Presidency the disease is prevalent over wide areas. Well watered tracts, with a fairly heavy rainfall such as Bengal, are generally free.

2. The prevalence of the disease is dependent on opportunities for the infection of water supplies by persons harboring the worm. In the affected areas step wells, tanks and other sources of water liable to contamination are responsible for keeping up the infection. For the destruction of Cyclopes, which harbor the embryos of the worm, the application of adequate quantities of lime to such water supplies has been shown to be effective. Even straining the water through fine muslin will suffice to remove the Cyclopes and render the water innocuous. But, from the point of view of permanent relief, it is essential to protect step wells, tanks and other open sources of water supply from contamination by persons harboring the worm. Our programme for giving safe water supplies to towns and villages will provide this permanent protection in due course. In the meantime it is essential that the public health staff should, in the areas in which the disease is endemic, try their utmost to get existing step wells converted into draw wells and to make safe other supplies, which cannot be so converted, by the regular application of lime and by instructing the people in the ways in which reinjection can be prevented.

11. CANCER

1. In our review of the cancer problem in India in the previous volume of this report, we have pointed out that the view held in many quarters that cancer is rare in India is not correct. Such evidence as is available seems to suggest that its relative incidence in India is probably as high as in western countries, taking into consideration the fact that the disease generally occurs at the higher ages of life and that a large proportion of the population of this country must be at the younger ages as compared with the inhabitants of those countries, in view of the average length of life here being much shorter than in the west.

2. Our proposals for the short term programme are: —

(1) Provision for radium and for deep X-ray treatments should be made, in addition to existing centers for such treatments, at all the hospitals associated with the present medical colleges and with those which will be established during the short-term programme. The centers at which such facilities are now available are shown in Appendix 20.

(2) In addition to the Tata Memorial Cancer Research Hospital at Bombay, three more institutions for promoting advanced research and teaching in the subject are needed to serve north-western, eastern mid southern India respectively. The collective efforts of these institutes, when established, should help to throw considerable light-on the incidence and relative distribution of the different types of malignant disease in India. These institutes would also serve as

centers for the training of those who will be responsible for developing cancer research and teaching in the medical colleges of the country.

If the experience of western countries regarding the trends of morbidity and mortality due to cancer are any indication of similar trends in India, the problem of the prevention and cure of this disease must have an important place in our national health programme. It is therefore hoped that cancer research will attract to itself the most gifted among the medical research workers that the country produces.

(3) A considerable extension of diagnostic facilities will be necessary. The laboratories attached to the hospitals at the secondary health centers and to the teaching hospitals, the provincial public health laboratory organization with its regional branches, which we have recommended in the chapter on medical research and the special institutes referred to above should all help to provide this extended service.

(4) One of us (Dr. Vishwanath) and DR. Khem Singh Greval, as the result of an extended study of biopsy and autopsy material relating to cancer available in the records of the hospitals attached to the teaching medical institutions in the country, came to the conclusion that, "whether it was the cervix, the oral cavity, the penis, the skin or the gastrointestinal tract, the factor of irritation seems to excel all other possible causes and brings the problem of this fell disease within the scope of preventive medicine." It is therefore essential to develop an educational campaign in regard to the removal, as far as possible, of the causes of such irritation. This campaign should include, within its scope, both the general public and the medical profession. The people should be instructed to recognize certain early indications which might suggest the presence of cancer and to seek medical advice without delay, in order to ensure adequate examination and treatment, where necessary. The medical profession should be made more cancer-minded and should be trained to recognize early signs of the disease in the patient. It will be the duty of the Health Departments in the country to provide for such education as an essential part of the campaign against cancer.

12. MENTAL DISEASES AND MENTAL DEFICIENCY

Introduction

1. The physical and mental health of an individual are inter-related and no health programme can be considered complete without adequate provision for the treatment of mental ill-health and for the promotion of positive mental health. Positive mental health is characterized by discriminative self-restraint associated with consideration for others. A man in such positive health uses effectively his intelligence and talents to obtain the maximum satisfaction from life, with the minimum of discomfort to others. He will not allow himself to be overwhelmed by the stresses and strains inseparable from ordinary existence. He not only profits from experience but under favorable circumstances, can transcend such experience. It should be the aim of every health programme to include measures meant to assist the individual to achieve mental stability and poise and develop into a useful citizen.

2. Conditions of mental ill-health may be divided into two Broad groups, (i) mental disorder and (ii) mental deficiency.

Mental disorder may be either inherited or acquired, and very often it is both. No age is exempt from mental disorder although the types may be different at different age periods. A large proportion of them is amenable to modern methods of treatment.

Mental deficiency is ascribed on the other hand, to a hereditary or congenital taint or to some accident or illness occurring just before or soon after birth. There are grades of mental deficiency, and although the condition is generally regarded as incurable, yet by proper care and supervision, the majority of defectives can be made to lead useful, but segregated lives; and what is more important from the point of view of society, they can be prevented from becoming criminals and in the case of girls, social menaces.

3. It may be of advantage, at this stage, to examine such evidence as is available regarding the incidence of these conditions else where, and attempt to draw from it inferences applicable to this country.

In England and Wales there were at the beginning of 1937 about 129,750 patients under treatment in the mental hospitals maintained by the various local authorities, who are responsible, under the law, for making such provision. This figure gives a proportion of about 3.2 mental patients per 1,000 of the population.

In America, the annual admission rate is more than 170,000, to the public mental hospitals, in which is already resident a population of half a million patients. More hospital beds are devoted to the care of the mentally sick than to the treatment of all other patients combined. In some States, as much as one-eighth of the revenue is earmarked for expenditure on the mentally sick. There are 500,000 mental defectives, and perhaps as many epileptics. Amongst criminals, there is a very large number whose offences are attributable to diseases and defects of the mind and maladjusted personalities.

During the World War, one-sixth of all casualties were neuropsychiatric, excluding wounds, and a peak load of one-third or more was sometimes reached by such causes. At least one child out of every twenty-seven children born in America and one in thirty born in England is likely to become, in the course of a few years, mentally sick to such an extent as to require admission in public hospitals. This is an appalling figure, but it does not include large groups of persons in whom the essential basis of ill-health is either a defective personality or an inability to adjust them to a difficult environment, while they are diagnosed as eases of debility, gastritis, anemia or rheumatism.

4. While some of the mental disorders are directly due to infections, or are associated with chemical or structural changes in the body, in most of the others however, no such changes can be discovered. They are termed functional and include two of the largest groups of mental disorder, the more severe forms being known as psychoses and the less severe forms as psycho-neuroses.

Schizophrenia (split mind) and affective reactions (mania and melancholia) collectively termed bio-genetic psychoses, account for

at least fifty per cent of the admissions to mental hospitals and for at least a third of the permanent, incurable, population of these public institutions.

5. Psycho-neuroses include a variety of forms of mental ill-health, Hysterias, phobias, anxiety states, obsession and compulsive neuroses belong to this group as well as problem children, stammerers, certain classes of delinquents and most of those who used to be diagnosed as suffering from shell shock. Psycho-neurosis also accounts for chronic ill-health in many men and women and for many so called nervous break-downs. The psycho-neurotic condition is often of a mild nature and most persons suffering from it do not find their way into hospitals. Psycho-neurosis is the most important single cause for absenteeism in industry, for unemployment and for poor turn-over in factories. "Dr. Halliday the Glasgow Regional Medical Officer of the Department of Health for Scotland under the Insurance Act, discovered that out of 1,000 consecutive cases kept away from work for 12 weeks or more, 33.5 per cent were in what was primarily a psycho-neurotic condition. He showed that the majority of these were certified as suffering from organic diseases including gastritis, debility anemia and rheumatism. He estimated that the incidence of psycho-neurosis among the employed males was 28 per cent., while it was 37 per cent among the unemployed. Further he showed that in one inquiry of 145 consecutive cases described as rheumatic 39.3 per cent., and in another 62 consecutive cases 37 per cent were psycho-neurotic In a close investigation of the psycho-neuroses of 21 insured persons he established a definite connection between neurosis and rheumatism. Dr. Thomas M. Ling, the Medical Officer of Joseph Lucas Ltd., Birmingham, analyzed the case records of 200 consecutive cases of sick employees. He concluded that 27 per cent., who were absent for two or more weeks, were suffering from psycho-neurosis, while the period during which another 32 per cent stayed away from work was prolonged by psycho-neurosis. A series of articles in the first three numbers of Vol. X of the Human Factor, the organ of the National Institute of Industrial Psychology, by Dr. Garland, provides evidence of a similar character obtained from a factory employing between 2,000 and 3,000 girls. Sir Maurice Cassidy, a consulting cardiologist, has also attributed 29.15 per cent of the cases coming to him to psycho-neurotic causes. It is suspected too, that accident proneness is due to some form of psychological condition. The Industrial Health Research Board, for example have discovered that 75 per cent of the factory accidents generally occur among 25 per cent of the employees. Thus there are evidently many people suffering from mental ill-health which is never diagnosed. Their health and their work often suffer and sometimes they may be even dangerous to their fellow citizens, particularly if they handle dangerous machinery, or drive cars. It is clear that the number of persons suffering from mental disorders of varying degrees of intensity must be much more than those who are admitted and treated in the mental hospitals in England.

6. As regards mental deficiency the Joint Committee of the Board of Education and the Board of Control on Mental Deficiency (commonly known as the Wood Committee) gave in its report

* *"Report* on the British Health Services PEP (Political and Economic Planning), pages 352-353.

which was issued in 1929, an estimate of about 300,000 mental defectives in England and Wales or 8 per 1,000 of the population

7. It will be seen that varying degrees of mental ill-health and mental instability affect a much larger section of the community than that which the statistics for mental patients suggest. General medical consultants in large cities in America have found not only that forty to fifty per cent of their consultations concern psycho-neurotic conditions, wherein no organic pathology can be found, but also that purely psychiatric or emotional factors are estimated to cause fifty to sixty per cent of physical illness. Asthma, eczema, gastric ulcer high blood pressure is a few examples. Hence has sprung a new branch of medicine—psycho-somatic medicine. The expenditure on mental hospitals in America is a billion dollars. It has been estimated that, if the time each patient stayed in hospital could be reduced by attention to the emotional factors in physical illness, the annual saving in public expenditure would be several million dollars.

The Result of Treatment

8. In connection with the general impression that the results of treatment in mental diseases are disappointing, Streaker and Ebaugh (1940) point out that "It is conservatively estimated that between 60 and 75 per cent of the psychoses which are comparable to what a genera physician would designate 'acute' are recoverable. Particularly in psychiatry do we meet conditions and situations which are capable of considerable modification in a favorable direction even though a complete cure may not be effected. This is particularly true in incipient and early Schizophrenia, and the failure to recognize this potentiality has made the outlook seem even gloomier than it really is."

In recent years, an increasing number of articles reporting a high proportion of cures, social remissions, and improvements in incurable patients have appeared. Recent progress in the understanding and treatment of mental disorder has been so spectacular that the chances of recovery of a mental patient can be said to be greater than those of a patient suffering from any other illness. The therapies deserving mention are shock therapy by eardiazol, and insulin, continuous narcosis, and exploratory therapy by a sodium pentothal, surgical approach to the brain by sectioning the white matter (leucotomy), and the use of penicillin, hormones, vitamins, and direct and indirect psycho-therapy.

The present position in India

9. The position in India is extremely unsatisfactory. It has been mentioned above that in England, in 1937, the ratio of mental patients treated in hospitals was 3.2 per 1,000 of the population, and in America the rate has varied from 5 to 8 per 1,000 in different years and in different States. These figures give only a rough indication of the extent of prevalence of mental disorder in the two countries. In India there is no reason to believe that the rate of incidence of mental disorder is in any way less than those in England and the United States. While it is true that, in this country, the higher rate of infant mortality and the shorter span of life for the individual should help to produce a smaller proportion of persons liable to adolescent and senile psychoses respectively, there are other factors influencing the development of mental disorder which are operative here to a greater extent than in those two

countries. Chronic starvation or under-nutrition, tropical fevers, anemia's and frequent childbirth in women who are unfit for motherhood are responsible for large numbers of mental breakdown in this country. On the other hand, purely sociological causes may not be operative in India to the same extent as in the other two countries.

In view of these considerations, even if the proportion of mental patients in India be taken as 2 per 1,000 of the population, hospital accommodation should be available for at least 800,000 mental patients. On the other hand there are only a little over ten thousand beds for such patients. The great disparity in respect of mental hospital accommodation between England and India can be shown in another way. In India the existing number of mental hospital beds is in the ratio of one bed to about 40.000 of the population (taking the present population of the country as 400 millions) while, in England, the corresponding ratio is approximately one bed to 300 of the population. Thus the provision in India for the institutional care of insane persons is about 130 times less than that existing in England, even if we estimate the rate of incidence of such cases here as about 37.5 per cent less than the rate in that country. As regards the possible numbers of persons suffering from varying degrees of mental disorder, who may not require hospitalization and yet should receive treatment, and of those suffering from mental deficiency, we have no information at all. It seems, however, almost certain that their numbers are likely to run into some millions in this country, if the ratio of incidence in England or America can be taken as even an approximate guide for estimating the numbers of such cases in India. Psychological and medical treatments are necessary for many forms of psycho-neuroses. Mental deficiency will require provision on a wide scale, including special educational facilities and institutional care for children suffering from various forms of this condition and segregation and treatment in institutions for a considerable proportion of mentally deficient adults also. Provision for these two classes of sufferers from mental diseases is almost non-existent in India.

In the previous volume of the report dealing with a review of health conditions in India we have already referred to the extremely unsatisfactory conditions of some of the existing mental hospitals which, it will be seen, are altogether too few to meet the requirements of the country. Colonel M. Taylor, I.M.S., Medical Superintendent, Ranchi European Mental Hospital, who visited, art our request, all the major mental hospitals in the country and prepared a report (Appendix 21) for us, says "every mental hospital which I have visited is disgracefully under-staffed. They have scarcely enough professional workers to give more than cursory attention to the patients." He also states that "Seven of the largest mental hospitals in India have men appointed as superintendents at salaries that a first cla3s mechanic in Tata Works would scorn, six of them have little or no postgraduate experience or training in psychological medicine, and yet these men have been charged with the supervision of large hospitals, and what is more important, human lives. The Deputy Superintendents and subordinate medical staffs are utterly untrained in psychiatry." The nursing staff and the ward attendants attached to most of these hospitals are, he points out, insufficiently trained and

inadequate in numbers to do efficient service. The use of Social workers and the provision of occupational and recreational therapy, which constitute important parts of a modern mental health programme, have, speaking generally, received quite insufficient attention in this country.

OUR PROPOSALS

10. In putting forward the following proposals we have had the benefit of advice from a small sub-committee, which we appointed, consisting of mental specialists from different parts of India and from Colonel M. Taylor, to whose report we have already referred. In our view the most important step to be taken is the formulation of a mental health programme for the country after a preliminary investigation of the needs of individual provinces. Such a programme should aim at providing for the community, in successive stages, a modern mental health service embracing both its preventive and curative aspects. As a part of the implementation of such a programme
two of the most urgent needs that should be met are (1) an improvement and augmentation of existing institutional facilities for the treatment of mental ill-health and (2) provision for the training of different types of mental health workers, including doctors and ancillary personnel. With these objects in view we make the following recommendations for the short-term programme: —

(a) The creation of mental health organisations as part of the establishments under the Director General of Health Services at the Centre and of the Provincial Directors of Health Services;

(b) The improvement of the existing 17 mental hospitals in British India and the establishment of two new institutions during the first five years and of five more during the next five years; :

(c) The provision of facilities for training in mental health for medical men in India and abroad and for ancillary personnel in India and

(d) The establishment of a Department of Mental Health in the proposed All-India Medical Institute.

(a) The Creation of Mental Health Organisations as part of the Directorate of Health, Central and Provincial.

11. The creation of mental health organisations as part of the establishments of the Director General of Health Services and of the Provincial Directors of Health Services is, in our view, of such great importance that we have placed it first among our recommendations. The problems of mental health have so far received very little attention in India and we believe that the appointment of officers with a wide experience of modern developments in this field at the Centre and in the Provinces is essential for the carrying out of preliminary investigations, the formulation of a sound programme of action and its effective implementation. So little information is available regarding the incidence of mental ill-health in the country and the developments in this field of health administration, even in the more progressive countries, are so recent that we feel we shall not be justified in attempting to make detailed recommendations regarding the mental health organization which the country requires. We must leave this task to the Health Departments with the guidance of the
specialists, whose appointment we have suggested.

12. We realize that, with the existing lack of medical men with special training in this subject in India, the appointment of separate mental specialists on the staff of the Director General of Health Ser-vices and of every Provincial Director may not be easy. We would suggest that a highly qualified person, with wide experience of the different branches of mental health work, should be appointed on the staff of the Central Directorate of Health and that his advice should be made available to the provinces in the development of their programmes. Until officers with similar qualifications become available for appointment in the provinces, we put forward certain suggestions for an interim arrangement. In a number of provinces mental hospitals exist at their headquarters. Bombay and Bengal are two-notable exceptions among the major provinces. We are, however, suggesting the establishment of a 200-bed mental hospital at Bombay and at Calcutta with the least practicable delay. As has already been pointed out, in most of the existing mental hospitals the superintendents are medical men without any special training in psychological medicine. We would suggest that steps should be taken, without delay, to appoint to these institutions (including the proposed new hospitals at Bombay and Calcutta) fully qualified mental specialists who can perform the dual function of being the superintendent of the mental hospital at the provincial headquarters and of acting as the adviser to the Director of Health Services on mental health administration. We suggest this arrangement only until qualified mental specialists become available in sufficient numbers to permit the ap-pointment of separate whole-time officials on the provincial Directorates of Health. We believe that the duties in connection with the development of mental health work in a province require the attention of a full time officer.

(b) An improvement of Institutional Facilities for the Treatment of Mental Ill-health

13. The existing mental hospitals, with the accommodation available in each, and the places where they are located are shown in Appendix 22. We were advised by the special Sub-committee that three types of institutions are required for the treatment of mental patients, *viz.,* (i) hospitals for general mental patients (ii) homes for mental deficient's and (iii) homes for incurables and for senile cases. It has further suggested that, normally, the accommodation provided in an institution of each of these types should be 1,000 beds. The staff required and the estimates of cost for each type of institution have been worked out for us by the Sub-committee and they are given as Appendix 23. The capital outlay required on each of these types of institutions is estimated at Rs. 10 lakhs. The annual recurring expenditure per bed is likely to be Rs. 1,000 for a mental hospital, Rs. 700 for a mental deficiency home and Rs. 550 for a home for senile and incurable cases, and the ratio recommended for these three types of institutions is 5:3:2.

14. We are in full agreement with the above recommendations of the Sub-committee as the ultimate objectives to be kept in view. In the meantime, we are putting forward our proposals for the short-term programme taking into consideration the existing inadequacy of training personnel and the possible insufficiency of funds. We suggest that radical improvements should be made in the existing mental hospitals in order to make them conform to modern standards. Provision should be made for all the newer methods of diagnosis and

treatment. The idea, which is now widely prevalent that these institutions are asylums and serve mainly the purpose of segregating mental patients from the general community, should be replaced by the conception of a hospital, which provides them with all the medical attention and sympathetic handling they require for the improvement of their condition. Apart from such remodeling of existing mental hospitals, we also recommend the creation of seven new institutions during the short-term programme, of which at least two should be established us early as possible during the first five-years period. These are the 200-bed hospitals in Calcutta and Bombay to which we have already referred. As will be seen from our proposals for the development of training facilities they are intended to play an important part in the creation of such facilities.

15. The existing seventeen institutions in British India are hospitals for the treatment of mental disorders. As far as we are aware, no homes of reasonable size and with adequate facilities for the reception and treatment of mental deficient's and of incurables exist in the country. The need for an expansion of mental hospital accommodation is, under existing conditions, so great that we do not wish to suggest that any of the seven new institutions we propose for the establishment during the short-term programme should be homes of either of these two types. A decision on this matter can, however, be left to the Provincial Health Departments after they have had an opportunity of studying carefully the requirements of their provinces and of formulating plans to meet them. As regards the size of the new institutions, we feel that this is also a matter for decision by the Provincial Health Departments. We would, at the same time, suggest for consideration the desirability of limiting their accommodation to approximately 500 beds. Considerations of cost and the need for staffing these new institutions with adequate trained personnel have led us to suggest a smaller bed strength of 500 instead of the 1,000 recommended by the Sub-committee. For the hospitals at Calcutta and Bombay we have proposed a figure of 200 beds in each case, mainly because of the need for ensuring all possible speed in their establishment in order to develop facilities for training mental health workers. We hope, however, that their expansion may be possible without undue delay.

(c) The Provision of Training Facilities for Medical men in India and abroad and for other types of Mental Health Personnel in India.

16. The urgent need for the training of a large number of medical men and of other personnel for mental health work will be realized from the remarks of Colonel Taylor, which we have already quoted, regarding the unqualified staff now employed in many of the existing mental hospitals. Further, any proposals for an expansion of mental health activity can obviously be carried out only if there be a simultaneous execution of an intensive training programme.

17. As regards medical men, the ultimate aim should be to ensure that all those who are employed in mental institutions should possess a recognized Diploma in Psychological Medicine. it is also desirable that the Superintendent, the Deputy Superintendent and "Senior Medical Officers in charge of different branches of work in a mental hospital should have a higher degree in Medicine or Surgery, such as M.D. or M.S. A proper clinical background in either of these specialties is of advantage to the medical officer even in the

treatment of mental patients, because a differential diagnosis of the condition of many of them may often require as much knowledge of general medicine and surgery as of Psychological Medicine. The possibility of error, with serious consequences to the patient, is great in respect of all who specialize only in their narrow fields. To quote Colonel Taylor's words "Every Psychiatrist has seen cases in which eye specialists have tried to correct failing vision by refraction in a patient suffering from General Paralysis of the Insane. Surgeons have frequently been guilty of operations on hysterics and psychiatrists have called the complaints of patient's somatic delusions, until they finally died of cancer."

18. One of the purposes of the tour which Colonel Taylor under took at our request was to make an estimate of existing training facilities in the mental institutions in the country. In his view such facilities exist on a reasonable scale at Bangalore and at Ranchi. At the former, the mental hospital has, he says, all the essentials for treatment and that it "is recognized as a teaching institution for M.B.B.S. B.A. (Hons.) in Psychology of the Mysore University and the L.M.P. course of the medical school. The hospital is also- recognized as a school for post-graduate work and some research work is already being undertaken." It is reported that the staff as a whole has attained a high standard of efficiency As regards Ranchi, the European Mental Hospital already provides a post-graduate course of) instruction which includes Psychiatry (Clinical and theoretical), For ensic Psychology and Mental Hospital Administration. The Instruction covers the ground in Psychiatry only, for the Diploma or M.D. in Psychological Medicine of London. This hospital is recognized as a training school for the Diploma in Psychology by the University of London and a teaching school for nurses by the Royal Medico-Psychological Association. There are no facilities for the study of advanced Anatomy, Physiology, Histology of the Central Nervous System and experimental Psychology.

19. We understand that, nowhere in this country, are availably all the facilities for the starting of a course for the Diploma in Psychological Medicine. We would suggest that, as early as possible courses of training for this diploma should be developed in Bombay and Calcutta in association with the universities concerned. We have already referred to the desirability of establishing, as early as possible, a 200-bed mental hospital to help in the provision of such facilities. We understand that, in the vicinity of Calcutta, there is a small mental institution, the Lumbini Park Mental Hospital, which is being managed by the Indian Psycho-Analytical Society. The visiting physicians are reported to be all highly qualified. But owing to inadequacy of funds, the institution is at present being conducted in such a way as to afford no training facilities. Colonel Taylor states that "this institution, given adequate funds to meet the cost of expansion on modern lines would in time become both a useful hospital and a good teaching school, and we recommend that this development should be assisted and advanced as early as possible. In Bombay the Child Guidance Clinic of the Sir Dorabji Tata Institute of Social Sciences is said to have made an encouraging start, although the number of children dealt with is small. Colonel Taylor reports that "This institution will be of great help in the training of both under-graduates and post-graduates in the study of problem children and child psychology." Advanced training in such subjects as Anatomy. Physiology and Histology of the Central Nervous System can

be provided in the Medical colleges in Calcutta and Bombay. Consider that the establishment of a Diploma in Psychological M cine, with the necessary training facilities at both these places is of the utmost importance. We also suggest that, as soon as possible, similar diploma courses should be developed in the universities of other provincial capitals also.

In the meantime it is highly desirable that a certain number of carefully selected medical men, with some experience of work in mental hospitals in India, should be sent abroad for training. We suggest that provision should be made for sending at least 20 doctors during the first five years and another 20 during the second five years of our programme.

20. As regards the training of non-medical mental personnel, the types of workers required to be trained are occupational therapists, psychiatric social workers, psychologists, nursing staff and male and female ward attendants. Ranchi already possesses facilities for training occupational therapists. Both at Calcutta and Bombay facilities for the training of psychiatric social workers should be developed. The Sir Dorabji Tata Graduate School of Social Work and the Lumbini Park Mental Hospital, when developed, should be able to participate in such training. The development of facilities for the training of psychologists can, we think, be undertaken in Calcutta where the Applied Section of Psychology of the Calcutta University and the Lumbini Park Mental Hospital can help in such training. The training of nursing staff and of male and female attendants should be undertaken in all mental hospitals in India and the necessary facilities should, we recommend, be developed without delay.

(d) The Establishment of a Department of Mental Health in the proposed All-India Medical Institute.

21. The establishment of a Department of Mental Health in the proposed All-India Institute is calculated to serve at least three purposes. These are: —

(1) The development of facilities for the under graduate and postgraduate training of doctors in all branches of psychological medicine and the demonstration to the provincial authorities of the standards to be aimed at. when similar training facilities are created by these authorities within their own territories;

(2) the promotion of research in the field of mental health and

(3) Participation in the organization of a mental health programme for the area in which the Institute is located.

22. All the above three purposes are, to some extent, inter-related. No programme for training workers in mental health will be complete without the provision of a field training centre, while the development of research in this subject also requires such a centre. The active participation of the Department of Mental Health of the proposed Institute in the organization of the mental health programme for the area in which it is located will help to secure the facilities for training and research in the field, the importance of which we have stressed.

The Promotion of Positive Mental Health

23. The pursuit of positive mental health requires the harmonious development of man's physical, emotional and intellectual equipment. Measures designed to create and maintain an environment conducive to healthful living and to control the specific causes responsible for

all forms of physical and mental ill-health are essential for promoting such development. The comprehensive programme of health reconstruction which we have recommended in this report, will, if implemented; constitute in itself no small contribution to the development of positive mental health in the community. Apart from provision for the prevention and cure of specific forms of ill-health, physical and mental, many of our proposals, e.g., those dealing with health and physical education, the social aspects of our programmes for to others and children, for the school going population and for industrial workers, the removal of slums and the creation of parks and other facilities for promoting community life should also help to raise the level of mental health in the community.

24. The development of an integrated personality, which will help the individual to adjust himself to the stress and strain of life, is essential if sound mental health is to be achieved and maintained. The mental health programme, if properly organized, should be able to assist in the endeavor to secure the unhampered development of human personality. Psychologists are agreed that the child requires a domestic environment which assures it a sense of security "based upon affection, consistency, fairness, regularity and serenity," if its mental development is to proceed on sound lines. At a later age the child's mental development is also influenced to a large extent by the teacher. An educational campaign for imparting to parents and teachers knowledge regarding the ways in which they can help the normal mental growth of the children for whom they are responsible, is an essential part of a mental health programme. Such education will supplement the provision that the mental health service will make, through child guidance clinics, to correct unsatisfactory mental or emotional states in children which, if left uncared for, lead to the development of "an aggressive anti-social attitude that is socially destructive, or to a regressive attitude which is destructive to the personality."

25. The mental health programme should also include within its scope educational propaganda for the adult. Opportunities for self expression through work and recreational facilities are of great importance for the maintenance of a man's mental health. He should therefore be encouraged to create for himself as wide a field of cultural activity as is compatible with his main occupation. The development of hobbies helps to keep alive an active interest in life. A cultivation of the love of nature enables the individual to escape from the cramping limitations of his daily round of duties and to obtain, from the changing panorama of Nature, refreshment which invigorates him without leaving behind any adverse after-effects. The arts also provide a varied field for self-expression outside a person's normal range of duties.

Economic insecurity probably plays a part in preventing the attainment of full mental health in the case of many adults. The view is widely held that unemployment promotes the incidence of psychoneurotic conditions and some evidence has been advanced in support of this view. The wider aspects of the social security problem arc clearly beyond the scope of our investigation. We may, however, draw attention to the fact that the provision of adequate medical care, preventive and curative for the individual, without regard to his ability to pay for it is becoming recognized in all progressive countries

as part of the National Social Security Programme. We have advocated in this report the adoption in India of this objective of a full and free medical service to all.

13. DISEASES OF THE EYE AND BLINDNESS

This subject was fully discussed and comprehensive proposals were made in 1944 by a Joint Committee of the Central Advisory Boards of Health and of Education. Its report deals with the problem both in its medical and rehabilitation aspects and, as the ground has been amply covered by this Committee in these two fields, we need do no more than commend its recommendations to the earnest consideration of Governments and all organisations, public and private, which are interested in promoting the welfare of the blind and in organizing preventive and curative health work for those who are afflicted with eye diseases.

CHAPTER XII

ENVIRONMENTALHYGIENE

Introduction

1. In this section we shall deal with the important problem of improving man's physical environment as an essential part of the campaign for promoting the public health. Adequate provision for remedial and preventive personal health services is no doubt essential for protecting the individual and the community. But the creation and maintenance of an environment conducive to healthful living may be considered to be of even greater importance because, in the absence of such provision, the services rendered by the doctor, nurse and other members of the health organization will largely fail to produce the desired results. In the campaign for improved health, drugs, vaccines and sera can in no way replace such essentials as a hygienic home, good food, fresh air and a safe water supply.

2. Experimental studies carried out by Top-lay, Greenwood and their co-workers in London have amply demonstrated the truth embodied in this statement. The factors associated with the occurrence of epidemic diseases in human beings are so diverse, including; movements of people who may be either protected against the disease by appropriate inoculation or not, that these medical scientists attempted to study the intricate phenomena accompanying such outbreaks by experiments on herds of mice using certain specific forms of infection. Without going into the details of these experiments it may be stated that the general conclusion was reached that, while protective vaccination would undoubtedly be of great value to those exposed to infection for a short time, it may prove to be of little benefit if the period of exposure to risk continues indefinitely. Under such conditions even the conferment or a high level of protection through artificial immunization will not prove a sufficient safeguard for the community against certain diseases. We may-quote the words of Professor Greenwood in which he sums up certain general impressions resulting from these studies. '' The Victorian watchword that prevention, in the man in the street's sense, is better than cure is still not obsolete. It is a great deal better to provide clean houses and food than to PR-immunize people against the possible consequences of dirty houses and food, leaving the environmental conditions alone. It is fortunate for the world that pre immunization against the typhoid group was not discovered in the days of *laissez-faire;* had it been, many more thousands would have died of typhoid than actually did." It is clear that, while preventive inoculation and similar measures have no doubt their place in the fight against disease, adequate protection for the community can ultimately be secured only by the creation of those conditions which are fundamental to a healthy life.

3. The measures to be undertaken by the State in order to control the production, transport, distribution and sale of food under hygienic conditions have been discussed elsewhere in the report. In dealing

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* Epidemic and Crowd-Diseases by Major Greenwood, D. Sc., F.R.C.F., F. R. S.—Publishers, Williams and Norgate Ltd., Little Russell Street, London.

with impersonal health services here we shall confine ourselves to the following subjects in the order indicated below: —

(1) National planning for town and country, including housing—
   (a) Town and village planning.
   (b) Housing, rural and urban.

(2) Public Health Engineering—
   (a) Water-supply;
   (b) General sanitation including conservancy and drainage;
   (c) River and beach pollution;
   (d) Control of insects, rodents and other vectors of diseases- and
   (e) Control of trades dangerous and offensive to the community.

It will be seen that we have divided the subject into two broad groups. The first deals with town and village planning or the utilization of land to the best advantage of the community in order to meet its various requirements including the provision of space for residential accommodation, amenities such as schools, markets, places of worship and recreation grounds and the development of industry, as well as with the problem of constructing and maintaining hygienic homes for the people. The second group of services has been brought together under the common heading of 'Public health engineering. As has been pointed out elsewhere, the modern tendency is to place the functions associated with such services as are included here in the hands of an engineer who has had special training to deal with the problems of environmental hygiene and to relieve the medical officer of these duties in order that he may concentrate on his preventive and curative medical work.

4. The subjects under consideration here are of such importance and some of them raise issues of such complexity as would seem to justify special investigation before decisions can be reached in respect of them. We have had neither the time nor the opportunities for a detailed consideration of these problems. We are therefore confining ourselves largely to certain general principles leaving their application to be decided after a review of the local conditions in each case. In the pages that follow we have put forward certain suggestions in respect of these problems and, although we feel that they do not constitute conclusions based on such a detailed consideration as their importance would require, we trust they will help to stimulate discussion and to facilitate further action.

TOWN AND VILLAGE PLANNING

Introduction

1. The purposes to be achieved by town and village planning include the following: —

(1) The utilization of the available land to the best advantage of the community by making provision for all its needs. Land is required for the development of residential areas with such amenities as recreation grounds, places of amusement, markets, schools and centers of worship. There should be provision for the location of industries in such a manner as to prevent the smoke, noise and offensive effluents proceeding from them spoiling the health and amenities of the inhabited area.

(2) Most of the populated and urban centers in this country have grown up in the past without due regard to the principles of planning. Therefore an immediate task which must be faced is that of providing for an amelioration of existing slum conditions. The demolition of overcrowded and insanitary blocks of houses and their replacement by hygienically constructed dwellings, in surroundings which are pleasant and conducive to healthful living, constitute the most urgent need, particularly in many of the larger industrial centers. The removal of slums raises at once the question of housing the people deprived of their homes and re housing plans therefore constitute an important part of clearance schemes.

Town and village planning must be concerned, at least indirectly, with the problem of housing also, although the primary object is that of securing a reasonable distribution of the available land between the varying needs of the people.

(3) The development of communications is such an essential part of community life that planning must include, within its scope, the provision of such facilities in the area covered by its operations.

(4) The aesthetic aspects of town and country planning should not be ignored. In both types of areas there is room not only for providing for man's physical needs but also for promoting his sense of beauty and love of nature which help him towards securing certain deep-seated satisfactions.

In considering these problems we have been greatly assisted by a report prepared for us by Mr. B. R. Kagal, Chief Administrative Officer at Jamshedpur, who undertook, at our request, a rapid tour of some parts of the country to study the problems of town and village planning and of housing. The more important parts of his report have been incorporated in Appendix 24 to our report.

The Present Position

2. The present state of town and village planning in the various provinces of India has already been surveyed briefly in Volume I, Chapter X, of this Report. While it is true that some attempts have been made to regulate the growth of certain cities and to deal with slums and conditions of overcrowding in them by the creation of Improvement Trusts, the number of such Trusts, is so small, and, for various reasons which will be discussed later, the success achieved by them has been so limited that the total effect of such planning on the country as a whole has been negligible. Indeed it has often happened as pointed out by the Central Advisory Board of Health at its meeting in 1940, that, after costly slum clearance operations were carried out by Improvement Trusts, the cleared areas were permitted by the authorities concerned to be built over without regard to the requirements of light, ventilation and sound hygienic construction. Such failure on the part of the local health authorities to enforce the powers they possess for regulating housing has resulted, not infrequently, in defeating the specific purpose for which slum clearance was carried out by the Improvement Trusts. The haphazard growth of industrial concerns in residential areas has also taken place in many of the larger industrial towns and cities as the result of failure, on the part of the authorities concerned to take appropriate action in the past. Slums have often grown around such industries and have helped to add to the congestion and instantiation of the areas concerned. Villages have frequently developed without streets and

without any attempt to regulate building construction. These remarks apply also too many of the smaller towns. As a result the orderly development of rural and urban residential areas has been woefully neglected in the past.

3. This state of affairs must not be allowed to continue. The Census of 1941 has revealed an accelerated rate of urbanization in India and this tendency has received further impetus during the later years of the war. In the post-war period it is to be anticipated that new large-scale industrial developments, the active promotion of agricultural operations on a wide basis and the execution of large public works will, in all probability, help to create new townships and settlements and thus further the process of urbanization. It is, there fore, of paramount importance to regulate the growth of towns in accordance with the principles of sound town planning and to make a determined effort to eradicate existing slums and to prevent conditions in which they can again grow and thrive. It is recognized that there are serious limitations to the improvements that can be effected in respect of existing built-up areas. These have grown during a number of years and it may not be easy to demolish and rebuild them in all cases. Tradition, prejudice, ignorance, a conflict of interests between the community and private individuals and the enormous expenditure that is involved are all factors to be reckoned with. At the same time, unless measures are taken now to retrieve the errors of the past and to ensure that new towns, cities and other inhabited areas are planned on sound principles, the problem we shall be creating for the future will be even more serious than that which faces the country today.

OUR RECOMMENDATIONS

Short-Term Programme

4. *The establishment of directional authorities in the Provinces and at the Centre.*—We consider it essential that a Ministry of Housing and Town and Village Planning should be established in each province as only in this way, can the subject receive the attention which it demands. Planning involves coordinated action by various government departments, such as those of land, agriculture, industries public works, irrigation, local self-government and health and the proposed Ministry will be responsible for ensuring that the necessary co-operation of all the concerned departments is secured. At the Centre we are not suggesting the creation of such a Ministry. Most of the direct responsibility for planning and execution will rest with Provincial Governments, but at the Centre there should be an expert in town planning who, for the purposes of administration, may be attached to the establishment of the Director-General of Health Services under the Ministry of Health. In making this recommendation we have been influenced by the fact that, while the subject of town and country planning is related to the activities of various departments of Government, the health aspect of this activity is, in our view, of over-riding importance.

5. This officer, although he will be attached to the Central Ministry of Health, should be the consultant on this subject to other departments such as the Railways and Posts and Telegraphs. He will be responsible for advising on all matters relating to town and village planning in Centrally Administered Areas. Further, all provincial

schemes which receive financial support from the Central exchequer will be scrutinized by him from the technical point of view before being sanctioned, during execution and on their completion. His professional advice will also be available to the provinces even in respect of schemes which are not supported by grants from the Centre.

7. We suggest that the Central Directorate of Town and Village Planning should function as an Information Bureau for town planners throughout the country and that the Directorate should be equipped with an adequate library and literature on the most recent developments in this field in other countries in order to make the information service that is provided as up to date and complete as possible.

8. As it is in the provinces that the major activities in connection with town and village planning will be carried out, the technical assistance to be provided to the Ministry dealing with this subject will have to be on a larger scale than that suggested for the Centre. But, before we go into the details of the composition of such a provincial technical organization, we may consider some of the more important functions which will have to be performed in connection with the proposed planning. The carrying out of such functions will have to be regulated by legislation and we therefore offer the following suggestions regarding such legislation.

9. *Town Planning Legislation.*—The main provisions of town planning legislation should include, among others, (1) the reservation of land in and around a town within certain notified limits in order to prevent its development in a manner incompatible with the principles of town planning; (ii) the prevention of ribbon development, that is the growth of a town along a highway and (iii) the requirement that all local authorities, improvement trusts, building societies, industrial organisations, private estate development concerns and Government Departments should submit all schemes for land development or slum clearance to the Provincial Ministry of Housing and Town and Village Planning for previous sanction before such schemes are proceeded with.

It is suggested that the proposed legislation should empower Governments to declare, by notification, the minimum size of projects to be submitted for approval in terms of the acreage of land to be developed, the number of houses to be built or the number of persons expected to be housed.

10. We suggest that the following minima may be prescribed in respect of the size of a developmental area and of a housing scheme in order to make approval by the proper authority a condition precedent to the starting of operations, namely, a plot of over 15 acres in size or a housing scheme involving 100 or more houses or family units or a scheme for housing 500 or more persons.

11. We believe that town and village planning are Provincial functions. Legislation to regulate planning in respect of towns exists in the provinces of Madras, Bombay, the Punjab and the United Provinces but, as far as we are aware, no such provision exists in respect of rural areas. We consider that legislation should be enacted in all the provinces on a fairly uniform basis and that it should include, within its scope, both urban and rural areas. We therefore suggest that the Central Government should, in consultation

with town planning experts, draw up model legislation and recommend its adoption by the Provinces or, with their approval, seek the enactment of an all-India Act. In either case consideration should be given to the possibility of incorporating in the proposed legislation -all the requirements that modern conceptions regarding town and country planning would suggest for inclusion. Compulsory acquisition of land is often an important measure to be adopted in this connection and, as this subject is also at present one within the jurisdiction of the provinces, we recommend that the existing law on this matter should be examined and that such modifications as may be considered necessary should be incorporated in the proposed model legislation.

12. *The provincial technical organization.*—We consider it essential that the Provincial Ministry of Housing and Town and Village Planning should be able to call upon the services of a technical expert as its adviser, who may be called the Director of Town and Village Planning. The Provincial Director should have in the beginning three Regional Assistant Directors in the larger provinces. Their number may be suitably reduced in the smaller provinces.

The duties of the Director of Town and Village Planning will include, among others, the following:

(a) To draw up master plans for such local authorities as may ask for them;

(b) To determine, on his own initiative or at the request of individual local authorities, the area around each of them in which the development of land should be controlled, and to advise the Minister to notify such area as reserved for town planning;

(c) To advise other government departments, improvement trusts, local authorities, registered housing co-operative societies and other organisations interested in town planning and housing, on the schemes they propose and to draw up schemes for them, if they have no competent technical advisers. If it is considered necessary to levy a fee on all organisations except government departments for the advice given to them, it is suggested that the fee should be kept to the minimum possible level in order to encourage all concerned to obtain the technical advice of the provincial town planning expert;

(d) To examine schemes submitted to the Ministry for approval under the provisions of the proposed legislation and to advise the Minister on them;

(e) To inspect schemes during execution and on completion, in order to ensure that they are carried out on approved lines. The Director of Town Planning is not expected to interfere with the routine administration of the improvement trusts and other concerns. But, as has been pointed out above, it will be his duty to see that, in the execution of works by them, the prescribed standards are maintained.

13. While our proposal is that every scheme falling within the prescribed standards should receive the prior sanction of the town planning authority before execution is proceeded with, such legal provisions will have to be supplemented by routine inspections in order

to ensure that there is no contravention of the law. The Director of Town Planning and his organization constitute too small a staff for the effective carrying out of such inspections. We, therefore, suggest that the Public Health Engineers at the district headquarters, the Assistant Public Health Engineers attached to the secondary units and the Public Health Inspectors in the primary units should undertake such inspections on behalf of the Director of Town Planning and bring to his notice cases of construction without the prior sanction of the proper authority. In the earlier stages of our programme there will thus be more effective supervision over unauthorized construction in the area under our scheme than in the territory outside it. The Regional Assistant Directors of Town Planning should, in the initial stages, concentrate attention primarily on the latter in order to ensure that a reasonable measure of compliance with the requirements of the law is enforced in this area also.

The Director of Town Planning should have a salary and status comparable with those of other heads of departments.

The Qualifications of a Town and Village Planner

14. In India planning has suffered in the past from the fact that the recognized expert advisers to Governments have, in many cases, been civil engineers in charge of Public Works Departments. While some knowledge of engineering is no doubt necessary, a town planner is not merely an engineer. Similarly, while he should know something of architecture, the town planner is not an architect pure and simple. The examination for the Associate Membership of the Town Planning Institute of London gives some idea of the range of subjects with which a town planner should be familiar. The intermediate examination for this qualification has a paper dealing with elementary principles regarding construction of buildings and roads as well as surveying and leveling In the final examination the subjects include: (a) the history of town planning (b) town planning practice, (c) town planning in relation to architecture and amenities, (d) town planning in relation to engineering, (e) town planning in relation to surveying, and (f) the law relating to town and country planning. The student is required to have some elementary knowledge about sewerage and water supply. The details set out in the syllabus indicate that the candidate should have, in relation to sewers and drains, information regarding requirements in respect of population and general knowledge of capacity, gradients and sewage disposal. He must also be familiar with the relation of the distribution of water, gas and electric supplies and sewage disposal to "zoning".

We have indicated above, in some detail, the technical qualifications of a town and village planner because we consider it will be a mistake to continue the practice of entrusting this branch of public administration to a Civil Engineer who does not possess the special knowledge that planning requires.

Planning in Urban and Rural Areas

15. *Large cities.*—In some of the larger and more congested cities of India, improvement trusts have been engaged, for some time, in slum clearance and the improvement of housing. These trusts have been created under different provincial Acts and they do not function in the same manner. For instance, we understand that the Calcutta Improvement Trust has no control over the erection of buildings on cleared areas while the United Provinces Town Improvement Act

makes the trusts the authorities responsible for operating, in the areas under their scheme the provisions regarding building and drainage in the provincial Municipal Act. The Delhi Improvement Trust was constituted by the Government of India by the application, under the Delhi Laws Act, of the United Provinces Town Improvement Act and this Trust exercises the right of enforcing the building and drainage bye laws of Delhi Municipality. It is understood that the Trust in addition to such powers, imposes other conditions also, *e.g.,* those relating to the lease of land for building purposes. It maintains its own staff for inspection during the construction of buildings and also after occupation, in order to ensure that all the rules and regulations are satisfied.

16. We have described above these differences in the functions of improvement trusts in order to draw attention to one or two matters. In Calcutta the responsibility for slum clearance and the responsibility for enforcing hygienic standards of construction in the cleared areas have been separated and assigned to two independent authorities, namely, the Improvement Trust and the Municipal Corporation respectively. This is understood to have worked unsatisfactorily as the building bye laws of the city have not been effectively enforced and the purpose, for which clearance was undertaken, appears to have been defeated. On the other hand, in Delhi the Improvement Trust is carrying out, in the areas covered by its schemes, functions which should legitimately be performed by the municipal authority. This results in the maintenance of separate supervisory staffs by the two authorities for the exercise of similar functions in contiguous areas.

It seems to us that neither of these represents a completely satisfactory situation. It is deplorable that cleared areas resulting from costly demolition operations should be allowed to be built over without adequate control. At the same time, measures designed to remedy this defect should not result in creating, within the area of a municipality's jurisdiction, another body which usurps some of its functions.

17. Before we make suggestions to meet the difficulties indicated above we may state our view that, the establishment of improvement trusts is necessary in all large cities of India for dealing with large scale slum clearance and re housing. We consider, however, that the responsibility for enforcing the law in respect of building construction, drainage and water supply, in the developed areas should rest with the local authority. It should be obligatory on the improvement trust, as on any other body or individual promoting large scale housing, to carry out the requirements of local bye laws regarding housing, water-supply and drainage. In fact, as a responsible public authority, it does not seem unreasonable to suggest that the trust might provide even better standards than those laid down by the local authority as being applicable to all.

18. We realize that, under existing conditions, local bodies have for one reason or another failed to a large extent to carry out the functions entrusted to them. We have made various suggestions in Chapter XVII, for improving the efficiency of local health administration. Apart from the legislative and administrative measures which have been suggested, we have included in our recommendations the appointment of public health engineers at three different levels of administration, namely, the headquarters of the province, the

district, and secondary unit, in order to assist in improving environmental hygiene including the enforcement of suitable standards for housing. We therefore believe that, if our recommendations are given effect to, local health authorities should be in a position to ensure greater compliance with the prescribed standards than they have done in the past. An improvement trust is at liberty, like any other corporate body or individual undertaking the development of large housing programmes, to employ such staff as it considers necessary to supervise its own schemes and ensure sound construction and the fulfillment of the prescribed standards. Nevertheless the local authority, advised by its technical officers, will continue to be responsible for enforcing these standards. Housing is but a part of the wider problems of environmental hygiene for the solution of which the local health authority must remain primarily responsible.

19. In making this recommendation we are not ignoring the possibility that, under existing conditions, certain improvement trusts may be carrying out the function of enforcing housing standards in a more effective manner than the local authorities with which they are associated and whose powers they have taken over. In these circumstances we feel that, we must leave it to the Provincial Governments concerned to decide whether the present system or the one suggested by us should continue for the time being.

20. In order to indicate the comprehensive nature of the planning that can be undertaken in a large city we give below a master-plan prepared for one such city, which makes provision for the following:—

(1) industrial zones with railway facilities;
(2) areas for housing industrial labor in close proximity to the industries, with provision for amenities so as to make these self-sufficient townships;
(3) Extension of the Civil Station providing accommodation for upper and lower middle class citizens with their domestic servants;
(4) location of business and civic centers on wide roads;
(5) reservation of sites for public and quasi-public institutions- in convenient localities;
(6) ring roads separating external and internal traffic;
(7) building sites for the poor within a reasonable distance of their places of work, with provision for amenities similar to those provided for townships;
(8) parks and playgrounds distributed over the entire area;
(9) canalization of water-courses and diversion of sullage and. sewage into a complete water-carriage system of drainage and
(10) Wide arterial roads driven through the heart of the existing congested city.

21. One of the handicaps, from which existing improvement trusts have suffered, is lack of technical assistance. Every trust should be required to employ a town planner on its staff as soon as trained personnel of this class become available in sufficient numbers. Such technical assistance and the requirement that all schemes above a certain prescribed standard should receive the previous sanction of the provincial town planning authority before the commencement of operations, should suffice to ensure that the schemes carried out by improvement trusts will not be technically unsound.

22. We would suggest that these trusts should not be allowed to sell land freehold. It should be given on long lease for building purposes with such conditions as are necessary to ensure that the prescribed standards are observed.

23. We are suggesting in the next chapter that the development of housing should definitely be the responsibility of Governments but that local authorities and improvement trusts should be made the main instruments for discharging this responsibility. Priority should be given to housing schemes for the lower income classes.

24. *Other urban areas.*—The urban areas for which the establishment of improvement trusts is likely to be considered not feasible will, from the point of size and importance, be such as to make them suitable for inclusion in the district health organization we have proposed elsewhere in the report. The local authority that should be made responsible for the planning of such urban areas should be the District Health Board. This authority should, as in the case of an improvement trust, be required to maintain on its establishment a trained town planner who will, in technical matters, be subject to the supervision of the Provincial Town and Village Planning Directorate. The public health engineering staff maintained by the District Health Board will be able to help, as has already been pointed" out, to carry out effectively town planning administration.

25. *Rural areas.*—The rural areas present the most difficult problem from the point of view of planning. In certain provinces many villages have no streets or roads, the houses having been built in discriminately over the village site. The reconstruction of built up areas on lines conforming to modern conceptions of planning will by no means be easy even in the larger towns and cities because of vested interests and of the high cost involved for these and for certain other reasons it will be even more difficult to rebuild villages on any substantial scale within a reasonable period of time. Until the health organization we have proposed is extended over the country and is sufficiently strengthened to enable it to take an effective share in rural planning, the provincial Town and Village Planning Directorate will find it difficult to secure suitable staff to undertake satisfactory supervision over the schemes that may be developed in rural areas. In these circumstances, we feel that however desirable it may be to re-plan existing villages, such planning may not be practicable as a short-term measure and that, during this period, attention may have to be confined to the layout of new villages which may be established as the result of developments in industry, mining, agriculture or the settlement of demobilized personnel. In the case of all new villages we recommend that the provincial Director of Town and Village Planning should be consulted beforehand by the department concerned and that he should design the lay-out. Large scale- road developments, electrification and irrigation projects may also stimulate the growth of village communities and if, with the initiation of such projects, planning principles are not simultaneously applied, there is a real danger of increasing the number of problems which we are seeking to solve. Road construction should be accompanied' by adequate legal provision against ribbon development. Here again emphasis should be laid on the need for prior consultation between the planning authority and the departments concerned with the promotion of development projects.

26. There are certain aspects of village planning which have been emphasized by Mr. Kagal in the report which he has prepared for us. We commend these for consideration. We may quote his own words—

"The technique of planning for villages is not different from that for towns. It has, however, to be modified according to the needs, characteristics, customs and standards of living. It is in this sphere that the knowledge of local conditions, customs and habits plays a very important part.

"The location of the market place in relation to the village, of, the manure pits, the cattle-shed and grain-store in relation to the home are some of the problems that need special study and tactful handling. The principle of "neighborhood units" adopted in the town can be worked into a village sitting plan to enable one unit to serve several villages."

27. The preservation of rural amenities is another aspect of planning for the countryside which should not be lost sight of. The provision of certain essential requirements for the maintenance of health such as protected water supply, drainage, markets and communications, is of course of fundamental importance. Apart from these, how ever, we consider it desirable that modern developments such as industrial and other projects of a remunerative nature should not be permitted to destroy the natural beauty of the countryside. As has been pointed out by Mr. G. M. Trevelyan, continued residence in cities is "not without deleterious effects on imagination, inspiration and creative power" while a holiday in the country enables a person "to drink in with the zest of a thirsty man the delights of natural beauty and return to the town re-invigorated in soul". An orderly development of rural community life so as to promote economic and social welfare, without at the same time disfiguring the face of nature, is the ultimate aim that planning should keep in view.

Location of Industry

28. We are concerned with the problem of industrial development only from the point of view of ensuring conditions favorable to the health and well-being of the workers and of the general community. We have considered the question in relation to the industrial workers in our chapter on occupational and industrial health. Here we shall confine ourselves to the question of the repercussion that the location of industry may have on the health of the general community.

29. The haphazard location of industries in inhabited areas must be controlled by proper legislation. Legal provision exists in certain provincial Local Self-government Acts for enabling the local authority to regulate their location within their areas. For instance, in the province of Madras, municipal and non-municipal local authorities have power to regulate, by the issue of licenses, the establishment of any factory; workshop or work-place in their territories provided these employ steam, water or other mechanical power or electrical power. It has been specifically laid down that the local authority has the right to refuse permission if, in its opinion, such location is objectionable by reason of the density of population in the neighborhood or by the likelihood of nuisance being caused. We desire that provision for controlling the location of industry should be included in the proposed model legislation we have recommended earlier in this chapter. Such provision should be applicable to urban

and rural areas. It is desirable that the law should be sufficiently elastic to bring within its scope all industrial establishments which are likely to be detrimental to the health of the community, irrespective of the question as to whether electrical or any form of mechanical power is used.

30. We have already suggested earlier in this chapter that, whenever an industry is to be established, the lay-out should be submitted to the Ministry of Housing, Town and Village Planning for previous approval. This requirement should apply not only to factories but also to any residential accommodation for industrial workers. In order to ensure that this legal provision is properly carried out we would suggest that the Director of Town and Village Planning and his assistants should be given the powers of factory inspectors for inspecting and taking appropriate action in respect of any violation of approved plans.

31. A colony for industrial workers should not be permitted on a temporary basis for a longer period than three years and, even during this period, provision should be made for such amenities as roads, water, drainage, sanitation and lighting. Failure to make such provision will generally result in the creation of conditions which are harmful to the health not only of the workers but also of the general community among whom they live. Our attention has been drawn to the extremely unsatisfactory conditions under which laborers employed on Government works in the capital city of India have been forced to live. We trust that such conditions will not be allowed to continue.

Training Facilities

32. There are no facilities in India for training in the subject of town and country planning. No degrees or diploma courses have been instituted in the universities. The subject is not taught in any of the existing engineering colleges. Nor has there been in the past a demand in the country for the services of trained town planners. The proposals we have made here will, on the other hand, require the creation of a large body of trained workers in this field. We make two recommendations in this connection. One is that a certain number of selected individuals should be sent to Europe and America for training in the subject. The other is that town planning experts may, if necessary, be recruited on short-term contracts from abroad and that training centers should be set up at least in a few universities in the country.

The Recruitment of Town-planning Officers for the Centre and the Provinces

33. During the short-term programme it may be necessary for the Governments in India to obtain the services of town-planning experts from abroad on short-term contracts. We consider it desirable that the Central Government and at least the major provinces should initiate town and village planning activities on the lines suggested in this chapter with the least possible delay. If the programme of training suggested by us proceeds satisfactorily a sufficient number of trained men will, in due course, become available to extend the service into the smaller provinces as well as for expanding the work already in progress in the larger ones.

The Establishment of an Institute of Town and Rural Planning

34. We believe that the advancement of science, in whatever field it may be, will be promoted by the creation of suitable scientific and technical societies. These help to stimulate discussion and to develop scientific activity. They also help to establish desirable standards of professional conduct and efficiency in their report the Industrial Commission (1918) on. Scientific and Technical Societies said, "we are of opinion that the interests of India demand the establishment of Indian institutes, societies and associations analogous to the Institution of Civil Engineers, Chemical Society and the British Association for the Advancement of Science". "We believe that, in due course, the development of town and country planning in India will be served by the creation of such an Institute of Town and Rural Planning. We may draw attention to the Road Congress which has been established with the object of promoting the science and practice of road-building and maintenance and of providing a channel for the expression of the collective opinion of its members on all matters pertaining to roads. Its membership is open to qualified engineers who are or have been connected with roads, to other persons of scientific eminence who are engaged in a responsible capacity in scientific work allied to road construction and maintenance as well as to persons who are engaged in the administration of roads or road transport, in business connected with the construction and maintenance of roads or in the manufacture or sale of material used in connection with the making or repairing of roads or road transport vehicles. The Congress has a Governing Body which provides representation for official engineering departments, engineers in Indian States, district board and municipal engineers and the general body of members of the organization. The creation of a similar organization for town and village planning will constitute an important step forward in promoting the development of this activity on sound lines and in advancing the cause of education and research in the subject.

The Long-Term Programme

35. In our view the implementation of the recommendations out lined in this chapter can and should be started with as little delay as possible during the short-term programme. Inadequacy of trained personnel and lack of funds will naturally make progress slow, particularly in the early stages. The re-planning of established cities and towns, involving as it does large slum clearance and re housing schemes must necessarily take time and can be accomplished only in stages. In regard to the planned development of our urban and rural areas it seems irrelevant to speak of two specific stages of short and long-term effort. Certain measures must, however, take precedence over the others. These include the creation of facilities for the training of the required personnel, the establishment of planning directorates at the Centre and at least in the major provinces and the enactment of the necessary legislation on the lines indicated by us. These and such other recommendations of ours as can be carried out without delay should receive early attention. They will constitute the short-term programme while the continuing range of activity designed to promote urban and rural land development on lines best fitted to serve the interests of the community will remain an un ending task, shaped and guided as it will be by changes in social outlook and by the growing complexity of the community's needs.

CHAPTER XIII

HOUSING, RURAL AND URBAN

Introduction

1. Housing and town and village planning must be considered as being complementary to each other. Housing in its wider sense is concerned with the development of residential areas in such a manner as to provide for the people hygienic dwellings in pleasant and healthy surroundings, with facilities for recreational and social activities. Planning is concerned with the equitable distribution of the available Land according to the various needs of the community, which include the provision for residential and industrial areas, space for broad thoroughfares, parks and gardens, and further development. Thus the planning of land distribution and the development of housing seek to achieve jointly the purpose of transforming the physical environment in order to create suitable conditions for healthful living.

2. The modern conception of housing is against the idea of creating a conglomeration of buildings erected without planning and often resulting in mere mechanical extensions of existing urban centers. On the other hand, in progressive countries, advanced thought in regard to the planning of land development and the provision of housing for the people favors the creation of what is known as the community unit. We may indicate what we mean, by a quotation from Catherine Bauer's "Modern Housing's. 'The ideal 'has undoubtedly been the self-contained regional town, complete with assorted industries, and agricultural belt and full facilities for social life. This is the one way to carry the premises underlying modern housing and planning through to a really satisfactory conclusion. The building of completely new cities, of a size and extent limited in advance and located scientifically in respect of natural resources, manufacture, and distribution is the only way in which the use-standards embodied on a small scale in the best modern housing can be enlarged to include all of modern human environment".

3. It will thus be seen that the new outlook is tending towards the promotion of land development and housing as a coordinated process in order to assist the growth of community life, including employment, on a rational basis. We believe that, howsoever difficult the housing problems of India may appear to be at present we should approach their solution from this point of view. Whether it be rural or urban areas, the provision of hygienic homes for the people and of facilities for full community life are common ideals to be realized. The villages, with their sparsely distributed population and the simpler habits of their inhabitants, whose vocations are mainly confined to agriculture and cottage industries, present a less complicated problem than the towns, with their requirements based on industrial development and populations living under intensely congested conditions

Existing Housing Conditions in Urban and Rural Areas

4. Housing conditions in India present a deplorable picture. Statistics of building and house construction are not available, but

the following figures for inhabited houses relating to India as a whole-including the Indian States are taken from the Census Report of 1941: —

Census year	Average number of persons per house (British India and Indian-States)
1911	4.9
1921	4.9
1931	6.0
1941	5.1

When it is remembered that these figures relate to houses of every description and size, from the one-room tenement to the large mansion, and include even temporary structures of flimsy construction so long as they are used for habitation, the value of these averages, for indicating the true extent of housing accommodation available to the people, is doubtful. One fact emerges. During the past few decades the rate of growth in housing has not kept pace with the rise in population.

5. A brief survey of existing housing conditions has been attempted in Chapter X of Volume I of our report. It is in no sense comprehensive in scope or complete in detail. We have given some of the impressions that we gained during our tours, of the terrible conditions of housing in some rural and urban areas and in particular of the appalling overcrowding in industrial areas. The single-room tenement is a common feature of even many of the more recently constructed housing accommodation in industrial areas. It often houses more than one family and in any case has to serve as living room, kitchen and bedroom. The sanitation of such tenements is usually inadequate and of a very rudimentary nature. Even where blocks of single rooms have been built for workers, the latrine and washing accommodation is usually quite insufficient. The War has greatly aggravated overcrowding in the great industrial areas. Thousands of workers have been drawn to them by new war industries or by the expansion of old ones, but little attempt has been made to provide the additional accommodation required. The result is that conditions in Calcutta, Bombay, Madras, Cawnpore, to mention only a few cases, are indescribable and intolerable. Thousands are without any home or shelter and have to live and sleep on pavements, verandahs, in open spaces, under trees, in cowsheds or in any temporary shelter. The Whitley Commission wrote in 1930: —

> "Neglect of sanitation is often evidenced by heaps of rotting garbage and pools of sewage, whilst the absence of latrines enhances the general pollution of air and soil. Houses, many without plinths, windows and adequate ventilation, usually consist of a single small room, the only opening being a doorway often too low to enter without stooping. In order to secure some privacy, old kerosene tins and gunny bags are used to form screens which further restrict the entrance of light and air. In dwellings such as these, human beings are born, sleep and eat, live and die". Conditions in urban areas are much worse today.

6. Provincial Governments have taken very little interest in the development of housing estates or in providing working class accommodation. The number of houses built by Improvement Trusts for the poorer section of the population, for the relief of overcrowding, or

for those displaced by slum clearance schemes, has been negligible. Most of the progress made in the housing of industrial workers has-been by railways and other authorities and by large employers of labor, many of whom have built quarters and housing colonies for their employees. Some are satisfactory, but many are still below a desirable standard for the low-paid workers. Private building activities are mainly for the benefit of the middle and wealthier classes.

There are laws in the major municipalities dealing with the prevention of overcrowding and the observance of elementary rules of hygiene; and they also exist in some of the enactments relating to smaller municipalities. But the authorities have shown little or no-interest in their enforcement; and very few local bodies have attempted to control or to encourage the development of housing on proper lines in urban areas.

7. In rural areas, houses are without water supply and latrines, lighting is inadequate or non-existent; many are in a state of disrepair, and without ventilation. Sometimes, the industrious housewife, with her general sense of tidiness, endeavors to keep the inside of the house clean and her brass utensils polished; but she is generally oblivious of or indifferent to the defects in the sanitation and cleanliness of the environment.

8. There is practically no control of rural housing throughout the country, although in Chapter X of the Punjab Colony Manual, the Punjab Government gives detailed instructions regarding the selection of sites for villages in colony areas and the manner in which such villages are to be laid out. No standards have, however, been prescribed for the dwellings to be built in these villages. Recently, the Punjab Government has decided to extend village planning to:

(a) a district board area where urban conditions have developed because of close proximity to a town, when it is found that, for any reason, it is not possible to extend the boundary of the town so as to include the rural area under consideration;

(b) Large villages of the size of small towns which, for one reason or another, cannot be notified as small towns;

(c) Villages found on survey to be tuberculosis-ridden and

(d) New villages which are springing up at important meeting; points of main roads in different parts of the Province.

The Impossibility of making an Estimate of Housing Requirements

9. This brief review of existing conditions has not taken into account the continuing growth of India's population. During the ten years from 1931 to 1941 the population of the country, as a whole, increased by 50 millions or about five million annually. In the absence of reliable statistics, even a rough estimate of the number of houses required for the country, taking into consideration the rate of population growth, the death rate and other factors, is almost impossible. There are also social changes which affect the housing; problem. The disintegration of the joint family system, which will increase in tempo with industrialization, and a rise in the standard of living, may well result in a demand for housing accommodation not less pressing than that caused by the growth of population During the two decennial periods, 1921—31 and 1931—41, the net

increases in houses were 4.8 and 8.5 million while the corresponding increases in population were about 30 and 50 millions. These represent average annual increases in population to the extent of three and five millions respectively during the two periods. The new houses built, during the two periods, were 16 per cent and 17 per cent of the respective annual increases in population. Inspire of these increases, the density per house rose from 4.9 in 1921 to 5.1 in 1941.

10. Without further data than are now available, it is not possible even to hazard a guess as to the extent of new construction necessary for providing housing accommodation of a reasonable standard for the existing population. A definition of what that standard should be would influence the estimate of the number of new houses required, because a large percentage of existing houses would be condemned as unfit for human habitation by any reasonable standard and another large percentage would require extensive improvement before they can reach the required standard.

Recent Housing Developments in Western Countries

11. We may briefly indicate some recent developments in Western countries in national housing programmes. Between the two world wars the provision of adequate housing for the people was recognized in most European countries as an urgent and important social problem. Governments accepted the view that "housing has become a public utility" and that "the right to live in a decent dwelling has taken its place in the "national minima"—the right to good and abundant water, to sanitation, to adequate fire and police protection, to the use of paved and lighted roads, to education, to a certain amount of medical care, and, in most European countries, to various forms of social insurance".

12. These national housing schemes have certain features, which include control by a public authority over housing standards and financial aid directed towards promoting the building of houses of the required quality and in sufficient numbers, and the maintenance of the scales of rent at reasonable levels. In order to ensure quality, some countries have organized "national agencies for establishing standards, for supplying information, education, plans and technical advice, and for conducting experiments in materials and methods." In the United Kingdom, the Ministry of Health has issued manuals of type design and procedure, and sanctions all plans submitted by local authorities before Government aid is given. In Germany there was, before the War, a State Society for Housing and Building Research, which published a number of reports and investigations, and also conducted many experimental housing developments in great detail.

13. Local authorities in the United Kingdom have been entrusted with the responsibility for working class housing by a series of Acts. Every local authority must review periodically the housing needs of its area and submit to the Government proposals for the provision of new houses for its working class population. By the Housing (Financial Provisions) Act, 1938. Grants from the Exchequer vary from £5-10-0 per house per annum for 40 years in respect of accommodation for the re housing of persons displaced in pursuance of clearance and redevelopment operations to a graded payment ranging

* Modern Housing by Catherine Bauer.

from £11 to £25 per flat per annum for the same period in the case of blocks of flats built on extensive sites. Housing for members of the agricultural population is subsidized to the extent of £10 per house per year for 40 years increased in exceptional circumstances •to £12 per year. Local authorities are required, as a general rule, to make contributions from their own funds on the basis of 50 per cent of the Government contribution, although in respect of agricultural housing their contribution is only £1 per home per annum for 40 years.

14. Some idea of the extent of housing that has been made avail able and of the financial implications of the national housing pro gramme may be obtained, for the period intervening between the two wars, from the following quotation from the "Synopsis of Hygiene" by Jameson and Parkinson: —

> "In November, 1918, the number of houses in England and Wales was just under eight million. From the end of the war to the 31st March, 1940, about four million new houses were provided in England and Wales, of which over a million were built by local authorities and about three million by private enterprise, and an increase of about 50 per cent over the number of houses in existence at the Armistice. Since the inception in 1933 of the five years programme for the clearance of the slums more than a million people have been removed from slum houses into new houses. The total annual contribution from public funds in respect of housing was about £19,000,000 in 1938-39 of which sum approximately £3,800,000 came from local authorities. Government subsidies are now available only in respect of housing accommodation required for the abatement of overcrowding, slum clearance and the re housing of the persons (displaced. Special assistance is given, however, towards the provision of houses for members of the agricultural population".

In view of the housing shortage brought about by the second World War, and the implications of the social security programme, the progress of housing operations in England must be far greater than it has ever been in the past.

OUR RECOMMENDATIONS

15. We have not had the opportunity of studying the housing problem in such a manner as to enable us to offer detailed suggestions regarding the formulation of a national housing policy. Many aspects of this question, such as finance, the procurement, standardization and price control of building material, the regulation of building construction through public and private agencies, and many allied subjects of fundamental importance, fall outside our sphere of enquiry. Our recommendations are couched in general terms and are mainly concerned with the importance of housing and planning to health.

16. In India a long-term housing policy, comprehensive in its scope and modern in its outlook, is essential for a satisfactory solution of the problem. The objective to be attained is the creation of

hygienic houses in sufficient numbers and of adequate size, in "sanitized" areas, equipped with all the facilities necessary for community life. The execution of such a programme will be possible only through a period of many years.

17. The main factors involved in the promotion of large scale housing schemes are: (1) the availability of land; (2) the provision of streets, water supply, drainage and other utilities to serve the common purpose; (3) the production of building material of the required quality at reasonable prices; (4) cost of the execution of the schemes and their maintenance, when completed. A housing programme can only be carried out successfully if Governments, local authorities and improvement trusts are prepared to enter the field with large scale housing schemes of their own, and to stimulate co-operative and building societies and private interests to more satisfactory performance, by financial and technical aid and the rigid enforcement of better standards. Governments and public authorities can perform the following functions: —

(i) The planning, execution and regulation of housing programmes including participation by local authorities and improvement trusts in house construction and maintenance;

(ii) The grant of financial assistance by long-term loans at low rates of interest, or grants-in-aid;

(iii) The prescription and enforcement of standards and

(iv) The promotion of housing research.

Regulation of Housing Activities

18**.** It has been pointed out by Mr. Kagal in his Report that land is plentiful in India and that with the proper distribution of industry and planning of land, it should be possible to control land values. Yet, we had evidence, during our tours, of the difficulty experienced by the authorities in acquiring land which was suitable for housing estates. The unearned increment, which accrues to the owners of land near towns and industrial areas owing to urban development, has a profound effect upon planning. Uncontrolled freedom to use such land for any purpose may be detrimental to the community, and some check should be exercised upon the extent to which owners of land may exploit the community for profit. We, therefore, recommend that the provisions of the Land Acquisition Act, 1894, and of all other legislation governing the acquisition and ownership of land be reviewed with a view to making such amendments as will remove the present obstacles to the acquisition of new lands for building and planning purposes, and to the control of the incremental value of land suitable for housing estates and village development.

The production of building materials of good quality at reasonable prices is a technical matter on which expert advice is required. It is essential, however, for any post-war housing programme, that building costs should be reduced to as low a figure as possible, commensurate with improved standards and satisfactory conditions for the labor employed. This is a matter which should interest the Central and Provincial Public Works Departments, and we would call the attention of the authorities concerned to the Report of the Expert Mission which was appointed by the Ministry of Works in the United Kingdom to survey American practice in the design and construction" of buildings, in equipment and finishing, and the use of material

with a view to securing in the United Kingdom in the post-war period ,(a) increased speed in output, (b) reduced building costs, (c) improved standards of equipment and finishing, and (d) improved conditions for labor. An enquiry on similar lines in this country is important and should be started as soon as possible.

Functions of the Provincial Government

19. Upon Provincial Governments must rest the primary responsibility for dealing with the problem of housing and town and village planning and for developing and executing housing schemes within their respective areas. (The responsibility of the Central Government for the centrally administered areas is that of any other Provincial Government.) This cannot be evaded by leaving it to private building interests or employers of labor. The housing of the people is essentially a State responsibility. it may, of course be delegated under suitable conditions and in defined areas, to local bodies or public authorities such as Improvement Trusts. Elsewhere, we have pointed out that every available agency must be utilized if a comprehensive programme is to be planned and executed within a reasonable time. But the Government concerned must be responsible for ensuring coordinated progress and for making or encouraging others to make a determined effort to provide more and better houses for the people. It is partly on account of this that we have recommended the establishment in each province of a Ministry of Housing and Town and Village Planning which will be charged with the responsibility for the preparation and execution of new housing, and housing improvement schemes, slum clearances and urban and rural planning. We consider that the importance of housing and the planned development of the towns and villages fully justifies the creation of a separate Ministry which will be responsible for the planning and execution of a province-wide programme. Only thus will this urgent problem receive the undivided attention of a single department and the determination of policy by Government at the highest level.

20. There is no doubt that Provincial Governments will not be able to provide, from their own resources, the finance necessary for a bold and comprehensive housing programme, and they will be entitled to look to the Centre for financial assistance. It has been suggested in some quarters that an All - I n d i a House Planning Commission should be established, to which the Centre would give grants-in-aid or loans. There may be constitutional difficulties in the way of such a proposal, on which we do not propose to express an opinion. But we do recommend that Provincial Governments should consider the establishment of a statutory body under the direction and control of the Ministry of Housing and Town and Village Planning, with financial resources and power to plan and execute a province- wide house construction and town and village development programme on a 20-30 year plan, in 5 yearly stages.

21. In recommending Provincial Ministries of Housing and Town and Village Planning, we have not ignored the fact that housing constitutes the most important part of the physical environment which continuously influences man's health and well-being. The Provincial Ministry of Health, therefore, is deeply concerned in the proper execution of any housing schemes and should be responsible for the control and enforcement of minimum standards in the design

and construction, not only of houses, but also of the environmental amenities, such as water-supply, sanitation and recreation. The two Ministries must work in close co-operation with one another and the staff of the Ministry of Health must, at all stages, be in contact with those who will be responsible for the execution of housing schemes and town and village planning. A more detailed reference to this will be made later.

Functions of the Local Authority

22. We have already stated that, in England, local authorities have been responsible, for nearly a century, for the control of State-aided housing. In Holland and Germany, it is understood that city corporations "are responsible for all housing in receipt of public aid that of co-operative societies as well as their own construction." In France, semi-official autonomous organisations known as Public Housing Offices are entrusted with the task of controlling public-aided housing while in Vienna where housing developments of an extensive nature took place prior to the recent war, the municipal authority concerned itself with all aspects of the problem, including regulation, financing, construction and experiment. (We need hardly say that these remarks refer, in respect of the Continental countries, to the period intervening between the two World Wars and not to the present time). We suggest that, in India, loans or grants by Provincial Governments to finance housing schemes should be administered by local bodies subject to such rules and regulations as these Governments may prescribe. It seems desirable that, as in the case of England, each local authority should be made to contribute a suitable proportion of the cost of such schemes.

23. The recommendations we have made for provincial and district health administration will, if implemented, establish certain new local authorities in place of existing ones. We visualize the creation of district organisations to deal with health, education, public work and communications, in order to provide more favorable conditions for efficient administration. We also envisage the establishment of coordinating bodies, on which these authorities will be represented, in order to ensure that their activities are integrated and directed towards certain common and desirable ends. It is not easy to state precisely how these changes may affect the administration of the Provincial Government. We assume, however, that the Ministry of Health will deal directly with the District Health Board, whereas the Ministry of Housing and Town and Village Planning will deal with whatever local organization or organisations may be concerned with housing and planning. Matters which require the attention of more than one district organization may be dealt with by the coordinating: body referred to above.

In carrying out a province-wide housing and planning policy in urban and rural areas, the work of enforcement of standards etc., from the health point of view, will fall upon the district health organization and its officers. It will possess a staff of public health engineers, with suitable and qualified assistants, who will be in a position to advise and assist local authorities in prescribing and' ensuring health standards in construction and planning work. On the other hand, the actual construction and maintenance of housing colonies will be carried out by the district agency which deals with public works, and which, in this connection, will be under the

control of the Ministry of Housing and Town and Village Planning or the authority to which the Ministry has delegated its powers. It is essential to secure coordination between the various units of the administration in order that development schemes may be executed with the greatest possible dispatch.

Functions of the Improvement Trust

24. Improvement Trusts can perform most valuable functions in connection with slum clearance and the re-housing of dispossessed inhabitants in large towns and cities. Slum clearance involves the re-building and re-planning of the cleared areas and this can also be undertaken by Improvement Trusts. We advocate placing the work of re-building in these areas in the hands of the Trusts and not in the hands of private enterprises. If the land is leased out or sold in blocks, building by private agencies is not likely, conditions in India being what they are, to yield such satisfactory results as building by a public body, such as an Improvement Trust, on well-planned lines. We have noted that few of the Trusts have adequate technical advice available to them in their work of planning and housing construction. We have recommended, in the last chapter, that each Improvement Trust should be able to employ a technical officer trained or experienced in town planning. With the strengthening of their general engineering and public health engineering staffs, the local authorities should be able to exercise better supervision, than in the past, over the housing schemes within their areas.

Housing Standards

25. Standards must be prescribed by the Ministry of Health and enforced by local authorities. The public health engineering staff maintained by the District Health Boards will as already stated carry out the necessary inspections and other duties in respect of all housing, whether constructed by public or by private agencies.

The fact that this supervision will be the function of the public health engineering staff, who are independent of the department or departments responsible for construction, should help to secure a more effective check on the quality of the work carried out whether by government, public authorities or private interests.

26. The following are some general recommendations regarding standards to be prescribed: —

(a) It has been estimated that the minimum accommodation- required per head is 100 sq. ft. for an adult and 60 sq. ft. for a child. It may be difficult to ensure this for all within any measurable time. We are satisfied, however, that in any new construction the minimum floor space for a room should be 120 sq. ft. We under stand that in some municipalities the minimum floor space prescribed is 80 sq. ft. or even 50 sq. ft. These standards are too low. The proportion of window to floor area in living rooms will, of course, vary in accordance with climatic conditions and the requirements of light and' ventilation. Uniform standards in India may not be possible, but we recommend that Provincial Governments should prescribe and enforce adequate standards regarding these matters.

(b) We are strongly of the opinion that the use of the single- roomed tenement by a family should be condemned. It is not necessary to enter into any elaborate arguments in support of this opinion, as the single-roomed house is obviously unhealthy and

venders privacy and the decencies of family life almost impossible. In our view no house or portion of a house intended for occupation by a family should consist of loss than two living rooms with a separate kitchen, a bath-room and latrine and in the warmer parts of the country, a verandah. In hill stations, this verandah may be replaced by another room. One-room tenements should be restricted for occupation by single persons and should be adequately provided with common kitchen, bath and latrine accommodation.

(c) The proportion of the built-up to the total area should be smaller in rural districts and small towns (panchayats and small municipalities) than in the larger towns. In the former, houses should have sufficient open land adjoining them for the erection of a cowshed and for the disposal of refuse and manure. Minimum set-backs, side and rear spaces should be regulated by local authorities in both rural and urban areas.

(d) The walls, floors and roofs of houses should be so constructed as to prevent dampness and also provide insulation against the easy transmission of heat, cold and noise. In the design, as few opportunities as possible should be given for the harborage of vermin.

(e) There should be statutory provision for water-supply, drainage and refuse collection for every house. The standards to be prescribed will have to vary according to the facilities available, but they should, in all cases, be approved and subject to inspection by the local authorities.

(f) The provision for excreta disposal will also vary, but certain minimum standards should be prescribed and enforced. We would recommend that, wherever land is available and the owner of the house can afford the expenditure, the health authority should enforce the installation of the water carriage system, small septic tanks and soil absorption systems for the effluent being provided. Such disposal is eminently desirable in respect of institutions such as hospitals, jails, schools and students' hostels. Apart from enforcing such provision by law, every encouragement should be given to enable owners, wherever land exists, to provide them with this sanitary convenience which, from the point of view of construction and maintenance, is not costly.

27. The above suggestions should be embodied in rules or regulations and be made gradually applicable, during the short-term programme, to all new house constructions or alterations of existing houses in the areas under our scheme. During the first five years, these rules may be made applicable to the larger urban centers and industrial housing schemes; in the next five years, they may be extended to the rural areas also. We do not imply, thereby, that the problem of the regulation of housing conditions in the rural areas is less important; but if rules are to be administered and enforced, there must be adequate staff, and for sometime the task of enforcing these requirements in urban centers will absorb all the energies of the organization we have recommended. Later, as staff increases in numbers and efficiency the rural areas will have to be -tackled.

28. In the areas outside our scheme, we expect that the enforcement of these rules and regulations may not be so complete or satisfactory as in those covered by our organization. It should, however, be possible for municipalities with health officers and the better

'trained and paid staff, which we recommend elsewhere, to enforce these rules and secure a reasonable measure of compliance with them.

29. These rules, when brought into force in any area, should pro-Tide that every person contemplating the alteration of an existing house or the erection of a new one must apply to the health authority and submit plans for examination and approval by its technical expert, the public health engineer or the health officer in his absence. Provision should be made for the owner to give notice to that authority when the building is completed and to obtain a "certificate of conformity with approved plans and standards" before occupation.

30. These standards apply to all construction whether undertaken by public or private agency, by industrial concerns, building societies, Governments, municipalities, private contractors, etc.

31. In a large housing construction programme, temporary provision will have to be made for the housing of labor employed in the works. It is essential that, in the interest of the public health, plans and specifications for the necessary accommodation and for arrangements in respect of such essential requirements as water-supply, latrines, urinals and disposal of excreta and rubbish, should be made, after being sanctioned by the local authority, before constructional operations are started. Less rigid standards than 'those for permanent housing will be prescribed for temporary establishments. The authority to prescribe such standards should normally be the Local health officer. In the case of works above a certain scale, there should be an appeal from the decision of this officer to the Director of Health Services, whose verdict should be final.

32. We recommend also that the Ministry of Health should scrutinize the housing schemes of all other government departments in order to ensure that they conform to the proposed minimum standard.

33. We further recommend that when Revenue or other Departments of Government make grants of Crown land for housing to individuals or communities, a condition should be laid down requiring that the houses should be built according to standards prescribed for the area concerned. We suggest this as an additional precaution in order to ensure the enforcement of the housing standards.

Type Plans

34. The legal enforcement of housing standards is only one method of approach towards raising the quality of construction. We believe that an equally important method is that of making technical advice on *the* subject as widely available as possible. One of the methods is the preparation of type plans, covering a considerable range of cost, material and sizes. The plans and estimates should be sufficiently detailed to be of assistance to the wide variety of people for whom they are intended. They will have to be based on local rates of cost as far as possible, and should incorporate locally procurable material. These type plans should be made readily available to the General public.

In rural areas it may not be possible to enforce building standards in the early stages of development as strictly as in the towns. The recommendations which we make hereafter, will we believe, promote house construction on more satisfactory lines. Public health

engineers and their staff should be instructed to give free advice regarding ventilation, lighting, drainage and other matters connected with house construction.

Housing Research

35. Housing research should be directed towards the evolution of various types of building suited to the requirements of different localities and climatic conditions and to varying income groups. To this we attach the greatest importance. Such investigations should include the development of local resources in building material of reasonable quality and durability. We recommend that building research should be initiated at engineering colleges and at special institutions where necessary facilities exist, for instance, the Forest Research Institute. In the United States a considerable amount of scientific research is regularly undertaken, by Governments, Universities, professional institutions, trades associations, manufacturers and organisations financed by private benefactors Great advances are expected in the development of building materials, more particularly in plastics, non-ferrous metals, composite and temporary materials, and materials used for thermal insulations. There is a large field' for research in pre fabrication or the factory production of buildings and large parts of buildings.

All-India Housing Research Institute

We have referred, earlier in this chapter, to a State Housing and' Building Research Society in Germany which carried out valuable work in this field There is also a Building Research Station in the United Kingdom which co-ordinates research activities. We recommend the establishment, with Government assistance, of an all-India Building Research Institute or Station. It should be a centre of active research in building problems, whose staff will be able to give technical advice to public and private bodies in the planning and execution of building schemes. Membership of this institute should be open to all interested in the improvement of house construction and planning generally.

Housing Schemes under Private Auspices

36. On however generous a scale active participation by the State and State aid in a comprehensive programme of housing construction and improvement may be provided, rapid progress will need the help of every available agency. We have already drawn attention to the fact that, in England: of about four million new houses constructed between 1918 and 1940, three million were built by private enterprise. In India also, the scope for individual enterprise and organisations will be very large. Non-official agencies interested in the housing problem include (1) employers of labor in factories, mines, plantations, docks, railways etc. and (2) the building trade. Employers of labor can render great assistance financially and in other ways in the promotion of a housing programme through co-operation with Governments and public authorities.

37. The building trade in India will require considerable organization and development if it is to play its part satisfactorily. With certain notable exceptions, private organisations and individuals, concerned with the building of houses for the people, lack technical guidance and knowledge in the planning and execution of their works.

A large part of constructional activity falling outside what may be termed "public works" normally goes on without any technical advice at all. Such technical advice will only become available on the scale that is necessary when the number of qualified engineer's and architects in the country is considerably increased. The provision of greater facilities for such training should, therefore, receive early attention. In the meantime, a stricter enforcement of building standards, and the undertaking of house construction by local authorities or improvement trusts with the help of their qualified staffs, which we have already recommended, should help towards a general rising of the standards of construction.

38. The need for an advance in housing in India is so great that it will be necessary to utilize every possible agency, whether private or public. Governments should be prepared to give financial assistance in the form of loans subject to strict conditions as to repayment standards of design and construction, and the rents to be charged Co-operative housing schemes and building societies should also be similarly encouraged and assisted.

Private building societies, whether assisted from public funds or not, should be required to set apart reserves for the maintenance of such services as refuse collection, repair of roads, cleaning of drains and similar community services for their housing estates if they are situated in areas where a local health authority does not provide such services. We have in mind the possibility of housing developments, under private auspices, outside municipal boundaries, as a result of increased transport facilities and of a desire on the part of the people to escape from the congestion of the towns into the more open surroundings of the countryside.

Housing for the Lower Income Groups

39. We believe that an India-wide housing programme should give first priority to the needs of the poorer sections of the population having less than a certain income. It is not easy to fix an upper limit of monthly income suitable for all provinces. In the South it might be Rs. 100 to 150 a month; in the North it might be Rs. 150 to 250. The limit would have to be fixed by each Provincial Government.

Urban Areas

40. In many towns and cities, industrial workers live interspersed with the general population while the proportion of such workers to the total of the community varies from town to town. In these circumstances, the housing problem must be considered for the community as a whole and not for industrial workers only, bearing in mind the income levels we have suggested for defining the working class population.

41. We believe that future developments in the housing sphere will be regulated on proper lines if such developments are undertaken under public auspices, particularly in the larger urban centers. We have already recommended the creation of improvement trusts in those large cities which are not likely to be included in the district-health organization we have proposed. These improvement trusts and, in the case of other urban centers, the local authorities concerned should undertake to provide the major part of the housing accommodation required for working class people Such housing operations will, no doubt, have to be correlated with slum clearance and these public authorities are responsible for this activity also. The provision

of housing estates on a well-planned basis, with such amenities as water-supply, drainage, roads and lighting will also be facilitated if the public authority is in charge of such operations.

42. We have already stated that the responsibility for providing houses for the people rests upon the Governments of the country. Local authorities and industries should no doubt, bear their share of the cost, but the State cannot escape the fundamental responsibility. Where new industries are started in undeveloped areas, however, this responsibility should be squarely placed upon the organization concerned and, indeed, as we have recommended elsewhere, it should be a condition precedent to the establishment of a new industry in an undeveloped area that adequate housing and other amenities for the labor to be employed should be provided.

Rural Areas

43. The housing problem in rural areas presents special difficulties. There is not such concentrated overcrowding there as in many urban areas. The village, though often congested, with its narrow lanes and its houses huddled together, is yet surrounded by open country which is more easily accessible to the inhabitants than it is to the town dweller. On the other hand, most villages lack such sanitary services and controlled water-supply, inadequate though they may be, as exist in many of the towns. They are also without electric light, easy means of communication and many of the amenities that help to make town life more tolerable.

44. Yet, at least 87 per cent of India's people live in the villages and their needs for better living conditions are as clamant as those of the townsmen. We believe that the minimum housing standards, which should be aimed at for the village, should be the same as those we have recommended for the lower income groups in the urban areas. There will, of course, be modifications in the lay-out and type designs of village houses which will make them more suitable for rural conditions.

45. The Governments concerned, through such local authorities as may be suitable, should be responsible for enforcing minimum standards in any new village construction. They should also assist, with finance, advice and example, in the improvement of existing houses in rural areas, Type designs for new houses and suggestions for the improvement of existing ones should be made available to the villagers through the Health and other appropriate Departments. We also suggest that the Governments should consider the desirability of arranging for the mass production of standard fittings etc., for village houses and for their sale to villagers at controlled rates and if necessary on an installment basis. Some of the articles suggested are door frames and doors, window frames with bars or expanded metal or wire mesh for protection, fireplaces and chimneys, wall cupboards, planks for shelves, squatting slabs for bore hole latrines, hand pumps, ventilators etc.

46. As in the case of housing in urban areas, the Governments should be prepared to finance or assist in financing any approved schemes for new housing or housing improvement, whether sponsored by the Governments themselves, by local authorities, by co-operative banks or societies or by private interests. The Governments must, however, exercise control over the planning and execution of such schemes and in particular over the rents to be charged for new houses

and any increase into the existing rent in the case of housing improvement.

In some provinces, this may necessitate tenancy legislation to ensure that the landlord or Zamindar bears his share of the capital expenditure involved, and does not impose an undue burden on the tenant.

47. There has been some discussion in the Committee on the priority which should be accorded to housing schemes for urban areas and housing schemes for rural areas. It has been suggested that the need for housing accommodation is acuter in urban than in rural areas. It has also been suggested that, owing to the constant migration from rural to urban areas, any improvement in housing conditions in the town will reflect itself in the village. From the point of view of the health of the community, the improvement of housing and general environmental conditions in the village is as important as in the town, particularly as so large a proportion of the people of India live in the village. Conditions vary from province to province. Some provinces have highly congested industrial areas, such as Cawnpore, Calcutta, Bombay, Ahmadabad, in which there are not only slums of a type seldom seen in any other part of the world, but also acute shortage of accommodation, so that thousands are obliged to sleep, live and eat in the streets and thoroughfares of these cities. In other provinces, this problem is not so acute. We have, therefore, decided to refrain from giving any general priority to housing schemes in urban as compared with rural areas. Provincial Governments must, on the basis of the conditions prevailing within their jurisdiction, decide for themselves what are the most urgent problems from the housing point of view All we do insist upon, is that housing should be regarded as one of India's major problems, to be attacked with all the resources which the Governments of the Country both Provincial and Central, can mobilize.

Financial Considerations

48. The housing programme, on the scale we have envisaged, will be costly. The Governments concerned will have to abandon the policy, which most of them have followed up to the present day, of insisting that schemes for slum clearance and house construction' must be self-supporting. The importance of adequate and better housing to the health and efficiency of the community cannot be calculated on a strict accounting basis. The effect of slum life, crowded tenements and ill-ventilated and insanitary conditions upon the productive capacity of the people is immeasurable. We have agreed that the provision of houses for the people is a State responsibility and that the development of housing schemes for the lower income groups, both urban and rural, should receive high priority The State, therefore must be prepared to provide the necessary funds by taxation or by loan.

49. There will probably be three types of schemes those which are financed wholly from provincial or central funds; those to which the State will give grants-in-aid; and those which are financed wholly by private interests.

Where the Governments wholly finance schemes, powers may be delegated to suitable local authorities to execute such schemes subject to adequate supervision. By giving grants-in-aid or loans at low

interest rates, Governments may utilize the services of public and private agencies including building and co-operative societies. Where schemes are wholly financed by private enterprise, Government's intervention should be limited to ensuring strict compliance with all the housing and other standards prescribed by law. Many of these powers are now vested in local bodies, and provided they are effectively used and are subject to constant supervision and control by the Ministry concerned, this practice may continue.

50. It is difficult to estimate, with any precision, the cost of housing the population on the basis of the standards we have out lined above. The authors of the Bombay Plan estimated a capital cost of Rs. 2,200 crores for the construction of new houses and the reconstructing of old ones, on the basis of an average of 100 sq. ft accommodation per head. They also estimated the cost of building a house with two rooms, a bath room, privy and a compound, with an over-all area of about 500 sq. ft. at approximately Rs. 400 in rural areas and Rs. 800 in urban areas. This may be an under estimate at present-day costs, which are considerably higher than before the War. The cost of a house, built to the standards we have recommended, excluding the cost of land, has been estimated in one urban area at Rs. 3,000. It must be remembered that provision has to be made not only for the capital cost, but also for the annual expenditure on maintenance.

We are not in a position to express a definite opinion upon the financial implications of our recommendations. We have urged that there should be an inquiry into building costs as early as possible. Even if present costs are considerably reduced, there is little doubt that the present resources of the Governments, local authorities and private interests concerned will not be equal to the task of providing decent housing for the population for many years to come. It is possible that for a time India may have to be content with something less than the standards we have recommended in the matter of housing, etc., though we are satisfied that they are the minima desirable from the point of view of the health of the community, and should be reached as quickly as possible. The figures we have quoted should not be a discouragement but an incentive to the accomplishment of a task which is of fundamental importance to the health of the community. Most of the cost of these schemes must be met from development loans raised at low interest rates. We are confident that the public will be prepared to subscribe freely to such loans once they realize that the proceeds are to be used for an all out attack upon the deplorable housing conditions which are to be seen in the urban and rural areas of India today.

51. We will refer to paragraphs 91—99 of Mr. Kagal's report on Town and Village Planning in India which is printed as an appendix. He points out that much money has been spent on buildings constructed for war needs during the past six years. Many of them are of a temporary character and will have to be dismantled. Much of this material might well be used by municipalities, improvement trusts, and government departments, the housing schemes for the lower income groups. Every endeavor should, therefore, be made to prevent this material falling into the hands of speculative builders who might embark upon indiscriminate building schemes which in the end will only lead to slums as distressing as those which exist at present.

52. The scope for the utilization of this war material in rural areas is possibly larger. Some of these camps, etc., which are now supplied with roads, services, and electricity might well form the nuclei for the location of new or dispersed industries, satellite towns, market places, or villages, "depending upon their size and situation. The utilization of surplus material for housing and betterment -schemes is of great importance and justifies the view of Mr. Kagal that a special technical section of the department dealing with the -termination of war contracts and the disposal of war materials, is necessary.

CHAPTER XIV

PUBLIC HEALTH ENGINEERING

WATER SUPPLY

A Survey of the Existing Provision

1. The provision of protected water supplies was started in India in the capitals of the three major provinces of Bombay, Bengal and Madras in the latter half of the last century—in Bombay in 1856, Calcutta 1865 and Madras 1886. Although in western countries such provision began to be made at about the same time, the rate at which: provision of protected water supplies in India has progressed has been much slower than in the west. According to the 1939 Report of the Public Health Commissioner with the Government of India, only 258 towns out of a total of 1,471 towns of all sizes in British India possessed protected water supplies. The population served by these water supply systems was about 12.7 million or 48.7 per cent. of the aggregate population of all the towns, but only 4.5 per cent of the total estimated population of British India in that year. The percentage of total population in individual provinces served by protected water supplies was small. In Madras the proportion was 6.6 per cent., in Bengal 7.3 per cent., in the United Provinces 4.1 per cent and in the North-West Frontier Province 9.0 per cent.

2. The total capital invested on water supplies in the country during the past 80 years amounts, we are told, to less than twelve Annam per head of the population and almost the whole of this has been spent in providing water to large towns.

3. Rural water supplies are mostly from wells, tanks, rivers and. streams. They are very largely unprotected. Until recently the question of providing rural water supplies appears to have generally been neglected. Even now the matter is not being given the attention it deserves. During 1935—37 the Government of India gave to Provincial Governments a grant of Rs. two crores to finance rural development schemes. A part of these grants was utilized by the provinces for the improvement of water supply in the rural areas. In addition, individual provinces have spent, during recent years varying amounts from their own funds for the same purpose, but the efforts so far made are wholly inadequate to meet the requirements of the rural areas, where nearly 90 per cent, of the total population of India lives.

Defects of Existing Systems of Water Supply

4. Most of the piped water supplies are intermittent. The quantity provided per head of the population varies from 2 to 25 gallon a day and is generally inadequate. In some cities *(e.g.* Calcutta) there are two supply systems, one for purified and the other for un-filtered water. The former is for drinking and domestic purposes and the latter for flushing the drainage system and for street cleansing. Many supplies were designed a decade or two before execution and proved, in consequence, too small to meet the needs of the population concerned when they were completed. An augmentation of supplies has rarely been attempted in timely anticipation of possible requirements. Pressure in the distribution system is generally low

5. The standard of quality of water varies from province to province. Only a few of these maintain their own laboratories for examination of water and for plant control. Examples of such are Calcutta, Madras, Bombay and Poona. Samples from the water supplies of five of the largest towns of the United Provinces are examined by the respective municipal health officers in their laboratories. Plant' control tests are, we understand, being carried out at the purification works in some cases only. In Bombay, urban water supplies Have "chlorine clerks" to determine the dosage of coagulant and chlorine to be applied. With these exceptions, control over protected water supplies in the country is limited to examinations of samples once a month or once in three months by the Provincial Public Health Laboratory concerned. Such periodical examinations are, however, not sufficient to maintain a fairly uniform standard of quality throughout the year. The great majority of water-works operators are not trained in the public health aspects of the processes they carry out, and possess only mechanical skill. We noted, during our tours that in the smaller works the superintendents have not maintained the chlorinating equipment in proper order and have not carried out tests for residual chlorine.

6. A Rural Water Supply Fund has been created in certain provinces for the improvement of rural water supplies; examples are-Bengal and Madras. Bengal has spent nearly 50 lakhs in providing a large number of tube wells in rural areas to combat endemic cholera. The maintenance of these wells has been left to local bodies. We were told that more than 50 per cent of them are functioning unsatisfactorily for want of repair while about 20 per cent are derelict.

Procedure adopted for the Establishment of Piped Water Supply Systems in Local Areas

7. The procedure followed in the provinces for the establishment of water supply systems is generally on the following lines. If a local body desires "to install a public water supply, it approaches the Provincial Government with a request for technical and financial assistance. The latter then directs the Sanitary Engineer to investigate and frame proposals and estimates. If the local body accepts the estimates and agrees to find, from its own resources, its share of the capital cost and maintenance charges, Provincial Governments make grants-in-aid varying from 50 per cent of the total cost to 33 per cent. The shape of the local body may also in certain cases be advanced by Government as a loan. The works are carried out under the supervision of Government and are then handed over to the local body for maintenance.

8. Under such a system, the request for the provision of a protected water supply must come from the local body. Local bodies are often averse to taking the initiative. The reasons for such an attitude include the limited nature of their financial resources, absence of borrowing powers and the unpopularity that the elected representatives on these bodies will have to face when increased taxation is proposed. The passive attitude of Governments and lack of initiative on the part of local bodies have been largely responsible for the extremely slow development of water supplies in India.

9. All these facts have to be taken into consideration in putting forward proposals for the development of rural and urban water supply schemes.

OUR PROPOSALS

10. In order to remedy the existing state of affairs, a vigorous policy should be adopted immediately by Governments for the development of a water supply programme, which should aim at providing the entire population under their charge with safe water for drinking and domestic purposes within a period of about 35 years. The initiation of schemes should not be left to local authorities and sufficient funds should be made available to complete the programme within this period. We consider it necessary that technical bodies which will be able to plan water and drainage schemes on a comprehensive scale and assist in the solution of problems associated with them should be established both at the Centre and in the Provinces. We shall now describe these organisations, their proposed constitution and functions.

Central and Provincial Water and Drainage Boards

11. For the reasons indicated below, we consider that the proposed organisations at the Centre and in the Provinces should deal simultaneously with the planning of water supply and drainage schemes for individual areas where they are to be introduced and it is for this reason that we term them Central and Provincial Water and Drainage Boards.

12. The provision of a piped water supply should simultaneously be accompanied by arrangements for drainage. Otherwise, conditions resulting from the presence of stagnant water, such as the breeding of mosquitoes are bound to arise. In the case of the larger towns and cities, a proper sewerage system would be financially possible. Such a system would make provision for the proper disposal of night soil and for the removal of storm water from the inhabited areas. In smaller towns and villages a sewerage system may not be feasible for financial and other reasons. It will be remembered that we have already recommended in the previous chapter that, for such towns and rural areas, the disposal of night soil should be arranged, as far as possible, by providing septic tanks and soil distribution systems for the effluent from these tanks. In the circumstances, surface drains, properly constructed and maintained, will constitute perhaps the best method of dealing with surface water in such places. The provision of these drains should be considered as an essential accompaniment of the establishment of a piped water supply system and should not be delayed on any account.

Functions of the Boards, Central and Provincial

13. The functions we suggest for these Boards are described in detail in Appendix 25. The Central Board will perform the dual task of carrying out, in the Centrally Administered areas, the same duties which a Provincial Board will perform in its own territory as well as of dealing with various matters of interest and importance to more than one province, such as the conservation of water on an All-India basis and inter-provincial problems of drainage and river pollution. in addition, the Central Board will assist the Central Government in carrying out, in the fields of water supply and drainage, its general

policy of promoting co-ordination of effort in the provinces and of giving financial aid and technical advice in the furtherance of their schemes

Common Functions of the Central and Provincial Boards and provision for their performance.

14**.** The more important among the common functions to be performed by the Central and Provincial Boards in their respective areas include the following: —

(1) the conservation of the available sources of water, in their respective areas, and its allocation to the different needs of the community, including drinking and domestic purposes, industrial needs and the requirements of hydro-electric development;

(2) the general planning of water supply and drainage schemes and the preparation of a list of priority in respect of such schemes;

(3) various technical subjects such as (a) the standards to be prescribed for the purification of water and sewage, (b) the standards to be aimed at in the maintenance of water works, urban and rural, as regards mechanical equipment and plant control, (c) the training and registration of water operators and (d) investigation of special local problems such as the purification of trade waste, removal of fluorides etc. and

(4) The recommending of grants-in-aid, to the Governments concerned, for water and drainage schemes.

15. Some of the subjects included here cover the fields of activity of more than one Department of Government and decisions taken in respect of them may have wide repercussions on the life of the community. Such decisions will therefore have to be taken by Government after due consideration of all the relevant factors. It will be the responsibility of the Boards to place before the Governments concerned such technical information as will prove useful to the latter in determining the course of action to be followed. The functions of the Boards will therefore be mainly advisory.

Provision of Laboratory Facilities for the Boards

16. In order to carry out the planning of schemes, each Board will have to employ a technical staff competent to undertake the necessary preliminary investigations, to prepare a detailed programme of works and to estimate their cost. The technical questions it may be called upon to solve will require the services of a laboratory equipped and manned suitably to deal with the investigation of such problems. Therefore, in these specific spheres, the Board will become responsible for certain executive functions also.

17. As regards the provision of such laboratories at the Centre and in the Provinces, it is presumed that in the investigation of many of these problems, existing public health laboratories will be able to participate if suitable additions to staff and equipment are made available Where the engineering aspects of such problems have to be investigated engineering colleges can, it is believed, be brought in to help. We consider that in the interests of economy, it is desirable to explore all possibilities of coordinating existing research facilities and of improving them, provided the required standards of efficiency can be attained. In the early stages of our development programme

any saving that can be effected in trained personnel and in funds will help materially to facilitate the expansion of the scheme.

Allocation of duties in respect of Water Supply and Drainage between the Board and certain Government Departments

18. The main administrative duties in respect of water and drain age will, in our view, continue to be discharged by the Public Works Department of Government and the Public Health Engineering Section of the Health Department, Central and Provincial. The former will be concerned with the construction and maintenance of water works and drainage, while the latter will be responsible for the supervision necessary to ensure compliance with prescribed standards. Where Provincial Governments maintain a special department for dealing with drainage and water works we do not desire to suggest any change in their arrangements. The Water and Drainage Board, Provincial or Central as the case may be, will undertake, in its capacity as an expert body, the functions of long-term planning, prescription of standards and of investigation of the problems associated with its own duties or of special ones referred to it for advice The work of each of these two organisations will thus be complementary to each other.

Certain Special Duties of the Central Board

19. We have already indicated the special duties which the Central Board should perform in addition to those which it will carry out in the Centrally Administered Areas on the same lines as those which; the Provincial Boards will discharge. Of these special duties, we desire to deal here with (1) the conservation of water in order to meet the needs of the different provinces concerned and (2) inter-provincial problems of drainage and river pollution.

The Need for Water Conservation on an Inter-provincial Basis

20. We may, at this stage, draw special attention to the imperative need for considering the question of conservation of water on an inter-provincial basis and of its equitable distribution for the different needs of the community. The importance of this question was forcibly brought to our notice by the Superintending Engineer, Public Health Engineering Department, the United Provinces. In a memorandum which he submitted he stated that "the depletion off the main rivers in this Province, particularly in the Jumna and the Ganges by the wholesale extraction of large quantities of water by the Irrigation Departments of the Punjab and the United Provinces, has had very serious repercussions on the water supply to several large towns in this Province, particularly Agra and Cawnpore. It has also created another problem which has to be solved, that is, large scale river pollution. Most of the large towns in the United- Provinces are located on the banks of rivers and with the limited flow in the summer months there is now, not sufficient dilution to permit of the discharge of untreated or partially treated sewage into the rivers as formerly was the case on the downstream side of the towns. Towns like Cawnpore and Agra will therefore for this reason be compelled to spend large sums of money on the construction of artificial sewage purification works to produce an effluent of a high standard. This huge expenditure, which in the case of Cawnpore will be at least Rs. 25,00,000 and a proportionate amount at Agra, which is also confronted with the same problem, would not have

been necessary, as a much lower standard of purification would have sufficed if the normal flow in the rivers had not been interfered with by the extraction of huge quantities of water for distribution on areas for cultivation miles away from the head works, none of the water extracted being returned in any form whatsoever to its original source." As regards water for drinking and domestic purposes it was pointed out, that "at Agra due to the absolute negligible flow in the river in summer months, the Municipality has to dig channels in the river bed to lead what virtually is a trickle of water to the intake of the waterworks pumps to afford a very limited supply of potable water to the town." Similarly at Cawnpore it is reported that in the summer months, extensive dredging operations are necessary "to get sufficient river water to the intake of the waterworks pumps.

21. The question of conserving all the available sources of water throughout the country and of so allocating the supply, from a common source, as to meet the reasonable demands of the individual provinces concerned, is of paramount importance from the standpoint of the health and general welfare of the people and we have come to the conclusion that this matter calls for special consideration. Where an urgent decision in such matters is required, the Central Government should be empowered to give a temporary decision, which should be binding on the provinces concerned until a final settlement is reached through the award of an Arbitration Board or any other suitable body, to which reference should be made with the least practicable delay.

Inter-provincial Drainage and River Pollution Problems

The same procedure should apply to inter-provincial problems of river pollution by trade-waste and sewage.

22. Even in a case where an emergent decision has to be given by the Central Government we consider it necessary that such decision should be taken only after consulting the Central Water and Drainage Board and the Central Board of Health in regard to the technical and administrative aspects of the question.

One of us (Mr. P. N. Sapru) does not agree with the above recommendations for dealing with these difficult problems. He has set out his views in a note which is appended to this chapter. The rest of us while recognizing that provision already exists in sections 130-134 of the Government of India Act, 1935, for securing redress in respect of executive action or legislation affecting prejudicially any natural source of water supply in a Province or a Federated State, consider it necessary to provide machinery which will facilitate speedy action in particular cases as well as help to solve the larger problem of conserving the available sources of water in the country as a whole and of so allocating the supply, from a common source, as to meet the reasonable demands of individual provinces. These provisions of the Government of India Act, which have been in operation since 1037, have not so far helped to solve or even alleviate the serious situation in Agra and Cawnpore, to which we have referred. In our view this state of affairs has been reached because of the absence of a competent body to review, from time to time, the problems of water conservation and river pollution on an inter-provincial basis. The Central Water and Drainage Board we have proposed is intended to

fulfill this role and the composition suggested or it in the next paragraph should help to ensure the technical competence of the Board to consider such problems, The board will act only m an advisory capacity and its recommendations will be subject t*o* review by the Central Board of Health consisting of the Ministers of Health at the Centre and in the Provinces. Therefore, even in giving an interim decision, the Central Government will be in possession of the views of a body, whose composition should help to ensure the consideration of such questions not in the interests of individual provinces but of the country as a whole. We may also point out that the procedure we have suggested for the settlement of disputes is more likely to provide, in view of the authorities concerned being within India, speedier decisions on such disputes than the existing procedure under sections 130-134 of the Government of India Act, to which our colleague refers.

Composition of the Boards

23. We recommend that the Central and Provincial Boards should include suitable persons from among representatives of the following interests:—

(1) The Agricultural, Irrigation and Hydro-electric Departments of Governments;
(2) The Public Health Engineer attached to the Central or Provincial Health Department as the case may be;
(3) The waterworks engineer and drainage engineer respectively of two large cities possessing piped water supply and sewerage systems;
(4) A microbiologist of standing from a research institute or a university;
(5) A distinguished worker in the field of water and sewage analysis;
(6) A geologist;
(7) The officer in charge of the Central or Provincial malaria organization as the case may be;
(8) The Director General or the Provincial Director of Health Services;
(9) The Chief Engineer of the Central or Provincial Public Works Department;
(10) The Secretary of the Ministry of Health, Central or Provincial and
(11) Representatives of local authorities in the case of Provincial Boards and of the local administrations in the case of the Central Board.

The Planning of a Provincial Water Supply Programme

24. We may now consider, in greater detail, the planning of a water supply programme. It is essential that the inclusion of intermittent and dual water-supply systems, which exist in India today, but which are recognized as a danger to the public health in other countries, should not be permitted in our programme for the future. We are indebted to Mr. K. Subrahmanyan, Professor of Public Health Engineering, All-India Institute of Hygiene and Public Health, for most of the details on which the following plan for the province of Bengal has been prepared. it is no more than a suggestion as a rough guide not only to Bengal but to other parts of India.

25. The following assumptions are made as the basis of a reason ably progressive plan, provided sufficient funds are available: —

(1) 50 per cent of the population should be provided with safe water during the first 20 years of the programme and

(2) during the next 15 years the scheme should be extended to cover the remaining 50 per cent.

26. The water supplies to be provided may be of two types. For the smaller villages with populations under 1,000 we recommend wells properly constructed so as to prevent surface and subsoil contamination and with pumps installed. On the assumption that one such well can serve about 250 persons, Mr. Subrahmanyan considers that the average cost in Bengal will be about Re. 1 per head of the population. In villages with populations of 1,000 and over it is suggested that a piped stand-post water supply system should be introduced. The cost of such a system will, he considers, range between Rs. 10 and 15 per head of the population in that province. It is recognized that the cost will vary considerably from province to province. It is desirable that, for each village, a source large enough to supply water at 25 to 30 gallons per head of the population should be investigated and located. The source must be as close to the village as possible. Pumps and elevated tanks may be designed, if necessary, on the basis of a stand-post supply of 8 to 10 gallons per head, but the distribution mains should be such as to provide for house connections and for an ultimate consumption of 25 to 30 gallons per head per day. In the beginning there need be provision only for street stand-posts at the rate of, say, one for 80 to 100 users or one at every 150 yards. There should be provision for sterilization of the water supply. The introduction of such water-supply systems of particular importance in the control of cholera, and priority in the planning and execution of water works should be given to those areas which are recognized endemic centres of the disease.

27. Mr. Subrahmanyan has estimated that, for the development of a water supply scheme on the lines indicated above, the annual expenditure for the first 20 years will be, for Bengal, about rupees two crores. According to him this figure will include provision for the purification of water and maintenance charges including repairs and renewals. The corresponding figure for India as a whole, he estimates, will be about Rs. 12 crores to Rs. 14 crores per annum.

28. It should be noted that these estimates are based on pre-war costs and will therefore require revision to suit conditions in regard to costs prevailing at the time of construction.

Priority in the Provision of Water Supply

29. The preliminary task of the Provincial Water Boards will be to draw up a plan of action. Certain general principles should be laid down for determining priority in respect of provision of water supply in specified areas and we suggest the following: —

(1) the incidence of cholera and other bowel diseases;

(2) the importance of the place as a centre for fairs and festivals;

(3) its location in relation to important lines of communication and

(4) the difficulty in obtaining water during the hot weather.

30. When the local people are willing to contribute either in cash, labor or material towards the construction of such works it is for consideration whether this should not constitute some claim for priority. We believe that the development of the spirit of self-help in the provision of amenities should be stimulated as much as possible.

Minute on Water Supply by The Hon'ble Mr. P. N. Sapru.

My colleagues observe: "The question of conserving all the available sources of water throughout the country and of so allocating the supply, from a common source, as to meet the reasonable demands of the individual provinces concerned, is of such paramount importance from the stand-point of the health and general welfare of the people that we have come to the conclusion that this matter calls for special provision. Where an urgent decision in such matters is required the 'Central Government should be empowered to give a temporary decision, which should be binding on the provinces concerned until a final settlement is reached through the award of an Arbitration Board or any other suitable body, to which reference should be made with the least practicable delay." I am unable to agree to this recommendation as the procedure suggested involves the giving of an interim decision by the Central Government which might ultimately prejudice an impartial decision by the Arbitration Board and which, if upset, would place the Central Government in an embarrassing situation and lay it open, should the ultimate award be different from that decided upon as an *interim* solution, to the charge of being partial.

The question of complaints as to interference with water supplies on the part of any Governor's province or the ruler of any federated estate was considered by the Joint Select Committee on Indian Constitutional Reform and is regulated by Sections 130, 131, 132. 133 and 134 of the Government of India Act the question of canals was specifically referred to by the Attorney-General. The White Paper had suggested that the provinces should be given exclusive legislative power in relation to "water supplies, irrigation and canals, drainage and embankments, water storage and water power"' and 'had reserved no powers of any kind to the Federal Government or the Federal Legislature. Even under the scheme as envisaged by the White Paper, the Federal Court would have had jurisdiction to decide any dispute between the two provinces in connection with water supplies, if legal rights or interests were concerned; 'but the experience of most countries', so the Joint Select Committee explains, 'has shown that rules of law based upon the analogy of private proprietary interests in water do not afford a satisfactory basis for settling disputes between provinces or states where the interests of the public at large in the proper use of water supplies are involved.' They further pointed out that they were cognizant of the importance from the public point of view of the distribution of water in India, upon which not only the prosperity but the economic existence of large tracts depends. They however came to the conclusion that it was neither desirable nor feasible to make the control of water supplies a wholly Federal subject. Yet, this is, apparently what my colleagues without giving any adequate reasons for their dissent from the Joint Select Committee's recommendations, suggest. The

Joint Select Committee suggested, and the suggestion has been incorporated in the Government of India Act that "where a dispute arises between two units of the Federation with respect to an alleged use by one unit of its executive or legislative powers in relation to water supplies, in a manner detrimental to the interests of the other, the aggrieved unit should be entitled to an appeal to the Governor-General acting in his discretion, and that the Governor-General should be empowered to adjudicate on the application". 'We think, however,' they went on to observe, 'that the Governor-General, unless he thinks fit summarily to reject the application, should be required to appoint an Advisory Tribunal for the purpose of investigating and reporting upon the complaint. The Tribunal would be appointed *ad hoc,* and would be an expert body whose functions would be to furnish the Governor-General with such technical information as he might require for the purposes of his decision and to make recommendations to him. Naturally, the recommendations of a tribunal like this would carry weight with the Governor-General but they would not be binding on him.' The definite recommendation that the Joint Select Committee made was 'that provision should be made for excluding the jurisdiction of the Federal Court in the case of any dispute which could be referred to the Governor-General in the manner which we have suggested. They particularly stressed that the powers of the Governor-General should not extend to a case where one unit is desirous of securing the right to make use of water supplies in the territory of another unit, but only to the case of one unit using water to the detriment of another.

In the debate that took place in the House of Commons (39. Parl. Debates, Indian Affairs, Commons, 1934-35, Vol. II, Col. 2437) the Attorney-General explained that Section 130 was intended to provide a method of settling rights, in natural sources, which cannot be taken to a court of Jaw because there are no legal principles by which the courts can regulate any disputes which may arise. It is for this reason that canals had not been put into the Clause because they can be disposed of by ordinary tribunals and do not require to be referred to the special tribunals which are set up.

No reasons have been advanced for going beyond what the Joint Select Committee and Parliament considered was necessary in the interests of protecting the rights of water being used to the detriment of a province. Under a system of complete responsible government the Governor-General would not be able to act in his discretion. It is for the constitution-makers of the future to devise machinery, if they so think fit, which would vest the power of investigating complaints in an authority representative of both the provinces and the Centre. But I do definitely think that no case, supported by any overwhelmingly large expert evidence, has been made for recommending that the powers which the Provincial Governments enjoy in the matter of water supplies should be whittled down. Inter-provincial problems of river pollution by trade waste and sewage, to which reference has been made in the body of our report, are capable of solution on the lines of the procedure laid down in section 103 of the Government of India Act. Consistently with the view that I hold that the autonomy envisaged by the Government of India Act should not be whittled down, I am unable to support the recommendation of my colleagues that the Centre should have the power to

arbitrate and give a decision which would be binding on the provincial authorities concerned in inter-provincial problems of river pollution, by trade waste and sewage. If the provinces think that river pollution is a problem which requires urgent action, they or such of them as feel the urgency of the problem, can transfer authority to the Central Legislature under the procedure laid down in Section 103 of the Government of India Act, 1935. I may state here that I must not be understood to agree to any proposal, in any part of the report, which will have the effect of giving a greater central bias to the constitution than that which is envisaged by the Government of India Act of 1935. In fact, I may add that I am opposed to subsection (4) of Section 126 of the Government of India Act, which was passed as an emergency war measure.

GENERAL SANITATION—CONSERVANCY AND DRAINAGE

A Survey of the Present Position

1. The present position in respect of sanitation is, speaking generally, highly unsatisfactory in both rural and urban areas. Practically no provision exists in the smaller villages for the collection and disposal of excreta and refuse and houses in such villages rarely have latrines. Very limited efforts have been made in a few small towns, panchayats and union boards to promote conservancy services, but here also the level of sanitation generally is low and, in these places too, most houses are not provided with latrines. A scavenging service and trenching are the usual methods of collection and disposal of night soil for such communities.

2. Sewerage has been provided only in a very limited number of the larger town? and cities and the inhabitants of these form only about 2 per cent of the total population of the country The underground drainage system was first introduced in India in Calcutta in 1870, about 20 years after its provision in London and 13 years after its establishment in New York. The extension of the sewerage system in India has, however, been extremely slow as compared with western countries.

3. Refuse disposal is generally carried out by dumping in low lying areas. Very few cities practice incineration as a method of its disposal.

OUR PROPOSALS

4. An improvement of the general sanitation in the inhabited areas of cities, towns and villages is a matter of urgent importance from the point of view of controlling a large part of the preventable ill-health. Nevertheless, the difficulties in the way of promoting a rapid advance in this field of health administration are so great that we feel the ingenuity and resources of Governments will be taxed to the utmost extent in solving these problems. The question of providing adequate funds stands out, of course, as one of the major difficulties. There are others, including the creation and main tenancy of well-manned and equipped technical organisations to deal efficiently with the problems of environmental hygiene and the education of the people with a view to their accepting and practicing the hygienic mode of life.

5. One difficulty that exists at present is that the self-governing units are, in many cases, so small (*e.g.* union boards and panchayats) that it is quite impossible for them to organize and maintain satisfactory conservancy services for the populations en trusted to their care. This remark applies in a greater or less degree to most municipalities including some of the larger ones, where the rates imposed are not adequate and are not properly collected. We have suggested, in Chapter XVII of this volume of the report, the abolition of the many small local authorities that now exist in individual districts and their replacement by a single body, the District Health Board, to control the whole area with the exception of the territory covered by certain large municipalities with populations of 200,000 and over. This proposal of ours should help to pool the resources of most of the existing local bodies in a district but we are doubtful whether, without developing other sources of revenue than those which these local administrations have at present, sufficient funds for the improvement of general sanitation and for the development of other health activities will become available. This is a .matter which should receive urgent and serious consideration but, in view of the complex questions the subject of public finance raises, we feel that we must leave it to Governments to investigate.

Collection and Disposal of Excreta

6. In the section dealing with housing we have already expressed our view that the manual handling of night soil during its collection and disposal should be rendered unnecessary as far as possible. For this purpose we favor the introduction of the water-carriage system as widely as may be practicable. We realize, however, that the provision of this amenity even in urban centers with populations of 50,000 and over will require an outlay of some 60 crores of rupees on capital works and recurring charges on an adequate technical organization for their maintenance. In view, however, of the importance of providing for the proper sanitation of at least the more congested urban areas we recommend that the severing of all towns with a population of 50,000 and over be made an objective to be attained within the short-term programme of the first ten years.

7. For smaller places, urban and rural, we recommend the use of septic tanks and soil absorption systems in order to extend the advantages of water-borne conservancy over as wide an area as possible. We recommended, in the section dealing with housing, that the provision of such septic tank latrines should be enforced on all owners who can afford the cost of their construction, and have also suggested that measures other than legal enforcement should be adopted in order to popularize and extend its use. Cheap and effective type plans have already been evolved, after experiments, by health authorities in certain parts of the country. Squatting plates made of porcelain or concrete with a water seal, which requires only a comparatively small quantity of water for flushing, have been made. Experiments in this direction should be continued as well as on the evolution of suitable types of efficient and cheap septic tanks. We suggest that provincial authorities should promote the construction of suitable squatting plates and make them available at cost price or less to the public.

8. In all un-severed areas we recommend that, for public latrines, the septic tank type should be employed wherever possible. In

every case the effluent from the septic tank should be distributed in the subsoil to a reasonable distance before it is permitted to drain into any water course. The local health authority should exercise control over the establishment and functioning of this type of latrines, we recommend, therefore, that their construction for private use should be governed by suitable conditions to be laid down and enforced by such authorities. In the areas under our scheme the exercise of the proposed control should present no great difficulty because the public health engineering section of the health staff will provide the required technical personnel for such supervision. In the areas outside our scheme, the existing health organisations should also exercise similar control as far as possible. In both types of areas the distribution to the people of type designs which utilize, as far as possible, local material and are cheap to construct should go a long way to popularize this kind of latrine.

9. In many places, where soil conditions are suitable, bore-hole latrines can be brought into use if a cheaper type than the septic tank latrine is required. In the Province of Madras, where the health authorities have had considerable experience of bore-hole latrines, we were told that this type, while it is satisfactory for individual houses, has not been found equally so for public use. We recommend, therefore, that, for the latter, the septic tank variety of latrine be preferred.

10. The squatting plates we have suggested for septic tank latrines can also be used for the bore-hole type and we recommend that provincial authorities should make these available at cost price or less so as to popularize their use-

11. For the area under our scheme we recommend a vigorous policy of latrine construction. The Public Health Inspector should be in charge of this work. One of the duties of the squad of fifteen laborers, provided in our scheme, will be to demonstrate to the villagers how to install bore-hole latrines. Latrine augers and all other appliances that may be required should form a part of the equipment of the staff. Apart from propaganda some form of inducement may often be necessary to persuade the villagers to provide themselves with latrines. One of the methods tried in certain districts of Madras was to give to every householder who put up a latrine, a squatting plate at half the cost price or even free. A borehole latrine used by a single family should last for about 21/2 to *3* years and should not cost more than about Rs. 15 including the squatting plate.

12. The progress made in the construction of these latrines will depend largely on the support that the public health staff of the primary unit can secure among the people. If each of the two public health inspectors in a primary unit could secure the construction of about 30 latrines in his area per month, about 7,200 such latrines would have been provided during the short-term programme in each unit. A rough estimate of the total number of houses in a primary unit with an average population of 40,000 is 8,000. The rate of construction suggested above will, therefore, largely solve the problem of night soil conservancy and the effect of this one measure alone on the health of the community would be considerable.

13. In connection with bore-hole latrines, it will be necessary to organize a re-boring service. Otherwise, with the filling up of the latrines in about two or three years, the people may revert to their previous habits.

14. The location and building of public latrines will, of course, be under the direction of the local health authority. The provision of water for ablution is desirable as apart from other considerations, such water helps the digestion of night soil in the borehole latrine.

15. We recommend that all schools, students' hostels, public offices, jails, and halting places for travelers such as dharmasalas, should be provided with septic tank latrines. The urinals for these institutions should also be connected with such latrines. These proposals should first be enforced in the areas under our scheme and may later be gradually extended to other places.

16. With regard to the disposal of excreta in un-severed towns, the existing practice is mostly to trench it. The sites for the trenches are unsatisfactory in some cases and the amount of supervision exercised over trenching operations is not sufficient to ensure their being conducted efficiently. We are of opinion that greater attention should be paid to these matters till the more efficient methods of night soil conservancy we have already indicated can be universally applied.

17. In some towns the night soil is mixed with refuse and a com-,post is made. This is a good way of "converting waste into wealth", but the process has disadvantages of which the handling of night soil is perhaps the greatest. Another is that it may promote fly-breeding unless adequate precautions are taken. These include the carrying out of composting in masonry trenches or on masonry platforms and under a roof in those areas where the monsoon rains are heavy. On the whole, after weighing carefully the hazard to health against the gain in manure, we are inclined to discourage composting unless the handling of night soil can be prevented and other necessary precautions can be taken. We would, however, advocate composting as an excellent method of disposal of the dung of cattle and other animals.

Refuse Collection and Disposal

18. In the rural areas the public health inspector should encourage the construction of manure pits in houses outside the inhabited area. In certain parts of the country, where people might not 'have land of their own, a common manure pit should be provided. "The village committee, we have proposed, should see to the provision of such common pits and their proper use. Villagers with cattle should be induced and trained by the health staff to compost cattle dung.

19. The systematic sweeping of all public places and the collection of refuse should be organized in the larger villages such as those which now have panchayats and union boards. All municipalities should insist on the owners of houses providing dust bins of an approved pattern and should undertake the collection of refuse from such bins. Standard dust bins of a durable type with bottom and cover lid must be used. The collection and disposal of refuse by contractors are undesirable, as it is difficult to ensure satisfactory service.

20. In the Municipal Acts provision generally exists for the levying of a scavenging tax to cover the cost of the service. Where this provision does not exist, the necessary steps should be taken to provide such powers.

21. It is recommended that municipalities with a population of 50,000 and over should maintain municipal workshops for repairs to the vehicles used for refuse collection.

22. The method of disposal of refuse adopted in a particular municipality will depend on local conditions. Whatever be the method that is used, it should be such as to ensure that fly-breeding and other hazards to health are prevented.

23. The disposal of rubbish by incinerators is recommended for all cities of 100.000 population and over. The construction and use of incinerators should also be encouraged for hospitals and other large institutions.

The Collection and Disposal of Sewage and Industrial Waste

24. As has already been pointed out, when a community is supplied liberally with water, the disposal of the used water becomes an important problem. Hence sewage works and drains have to be planned and built to keep pace with the extension of piped water supplies, particularly in the larger urban centers.

25. The short-term objective we put forward is the planning and the carrying out of sewerage and sewage disposal works in all towns with populations of 50,000 or more and, in all health resorts and industrial colonies housing 1,000 people or more as well as the remodeling of existing sewerage systems on lines sufficient to provide for the connection of at least 95 per cent of the houses in the-areas concerned. This will bring the benefits of the water-borne system to approximately 50 per cent of the urban population, including under this class all towns with populations of 5,000 and over.

26. We have provided for the short-term programme of sewerage-construction a sum of Rs. 60 crores in all, or Rs- 6 crores per annum for 10 years for British India alone. It is suggested that one half of this amount may be given as grants and the other half as loans to local bodies. As in the case of water supply, the initiative for the development of the programme must come from the Provincial Government and the Provincial Drainage and Water Board. The latter should, through its technical staff, prepare plans and estimates for severing all towns of 50,000 population and over, and Provincial Governments should, in co-operation with local authorities, carry out these plans as quickly as circumstances permit. The ultimate aim should be to extend sewerage systems to all urban communities. In the meantime the provision of open drains, properly constructed and maintained, will be necessary for towns with populations of less than 50,000 because the introduction of a piped water supply should be accompanied by adequate provision for drainage. The Provincial Water and Drainage Board should be responsible for the planning of this type of drainage also.

27. We have not dealt with the disposal of industrial wastes separately. We think that they may, in many cases, be let into the city sewers in places where these exist. Certain trade wastes will however, require prior treatment before they are permitted entry into the sewers, because such wastes may interfere with the biological action which is the basis of sewage disposal. These wastes must therefore receive such treatment as may be necessary before they are

permitted to leave the premises of the factories concerned. If factories are located far away from the severed area of a town or in a place where the underground drainage system does not exist, the need for adequate treatment of the waste water will, in many cases, be even greater.

28. Both sewage and trade waste, when they emerge after appropriate treatment, should have attained certain standards of purity before they can be permitted to flow into rivers, lakes, the sea and other large bodies of water. Water and Drainage Boards will be responsible for supplying Governments with suitable technical advice in respect of such problems. This subject is dealt with more fully in the next section dealing with river and beach pollution.

RIVER AND BEACH POLLUTION

Introduction

1. The uncontrolled discharge of sewerage effluents and industrial wastes into bodies of water such as tanks, lakes, streams and the sea produces conditions which are offensive to sight and smell, endanger public health, kill fish life and change the natural flora and fauna. It may produce other detrimental effects such as the loss of certain recreational facilities to the community and a depreciation of the value of property situated close to these polluted tanks, lakes and other water collections. It is, therefore, clear that such pollution should be controlled in the public interest. The quantity and strength of the sewerage effluent admitted to natural water sources should be adjusted with due regard to the volume and capacity for oxygenation and self-purification of the receiving bodies of water as well as to the uses to which these will normally be put by the community. The extent to which public water supplies derived from rivers and streams which are liable to sewerage pollution, have to be purified depends on the load of such pollution.

Existing Conditions

2. In India there are many towns and cities on the banks of rivers only a few cities are severed and industries have not yet developed on a scale comparable with the more advanced countries of Europe and America. Hence it may appear that the problems of river and beach pollution are not so grave here as in those countries. This is however, only partially correct. Whether severed or not, most of the big cities are situated on the banks of rivers or on the sea coast The general sanitation of many of these cities is of a low standard and a varying proportion of the silage and night soil from them finds its way to the rivers and the sea. Examples are the Gumti which is polluted by the sewage of Lucknow, the Ganges by the sewage of Cawnpore and of Benares and the Jumna by the silage of Agra and the sewage of Allahabad. The Hooghly receives discharges of wastes from the factories and of silage from the towns, which are situated on both sides above and below Calcutta. The situation became so acute in the Calcutta area that legislation was enacted requiring that sewage effluents into the Hooghly should be sterilized. It is understood however, that the law has, in practice, been rarely enforced. The discharging of effluents from sugar mills, distilleries, paper mills, tanneries and other industries into rivers and ponds has given rise to offensive conditions in various parts of the country. The problem is likely to become more acute with the anticipated post-war growth in

urbanization, in industrialization and in the severing of urban areas, unless adequate measures are undertaken without delay.

Control in England and the United States

3. In England pollution of rivers by sewage was one of the subjects considered in the report of the Royal Commission on sewage disposal in England. The rivers in that country have been stated by one authority to be too short to undergo any appreciable self-purification. The Royal Commission recommended certain standards for sewage effluents depending on the extent of the dilution to which it is subjected. These standards have been found to be suitable, on the whole. In that country the control of a river basin or catchment area as a whole is entrusted to an organization known as a River Board.

4. In America the laws and practices for the control of river pollution vary in different States. In some the rivers are divided into classes according to their natural uses and standards of purity for effluents are prescribed according to the class of the river concerned.

OUR PROPOSALS

5. In our view early action is essential in order to prevent this problem reaching an acute stage in India. Existing laws provide, to some extent, for action against the fouling of water supplies. For instance, the Indian Penal Code makes the voluntary corrupting or fouling of the water of a public spring or reservoir a penal offence. While some Provincial Local self-government Acts, by placing the control of streams, channels, and other water sources not situated on private property, under local bodies, have made it possible for the latter, if they are so disposed, to control pollution by sewage and trade waste. But these legal provisions have so far had little practical effect as they have not been enforced. Further, the problems of river and beach pollution are often of such magnitude that uncoordinated efforts by individual local bodies or by the police in respect of the provisions under the Indian Penal Code are not sufficient to meet the situation.

6. In the sections dealing with water supply and general sanitation we have recommended the establishment of Central and Provincial Water and Drainage Boards and have included among their functions the control of river and beach pollution. We attach considerable importance to this recommendation. These boards, acting in close co-operation, will be in a position to deal with a river basin or a catchment area as one organic unit and to view the problems of developing water supplies and of sewage disposal in such a manner as to harmonies conflicting interests and to ensure the safeguarding of the public health. On their advice the Central and Provincial Governments will, in consultation, be in a position to take appropriate action to control river pollution on an inter-provincial basis as well as to deal with beach pollution.

7. On the technical advice tendered by the Boards, Governments should make legal provision requiring the fulfillment of certain standards of purity for sewage effluents and for trade wastes if they are to be permitted to flow into rivers, seas,' lakes, and other sources of water. Complicated questions that may arise in respect of the treatment of special types of trade waste can be investigated by the Boards through their technical staff and laboratories.

CONTROL OF INSECTS, RODENTS AND OTHER VECTORS OF DISEASE

Introduction

1. Control of the environment so as to make it unsuitable for the breeding of certain insects, rodents and other forms of animal life which transmit disease to man is also a function of a modern public health engineering department.

Mosquito Control

2. We have dealt with mosquito control in the section on malaria. Preventive measures such as surface and subsoil drainage, the flushing of rivers and other water courses and the shading of breeding places should be undertaken only after a careful study of the habits of the type or types of mosquitoes responsible for transmission locally. We recommend that such schemes should be carried out under the combined technical guidance of the malariologist, the public health engineer and the entomologist.

3. Other recommendations, which we have included in that section, are (1) the acquirement, by local health authorities, of the necessary legal powers for the enforcement of anti-mosquito measures and (2) the requirement that, in respect of all construction works undertaken by the different departments of Government, the Ministry of Health should be consulted and that all anti-malaria measures prescribed by that Ministry should be carried out. The cost should be included in the estimates for these projects and the health authorities should be entrusted with their execution.

4. We recommend that mosquito control should be exercised to the highest possible degree in and around aerodromes and major sea ports in order to prevent the introduction of yellow fever into the country.

Rat Control

5. We have dealt with this question, at some length, in the section on plague, and do not, therefore, propose to cover the same ground here. We may, however, state our view that a permanent solution of the rat problem will be secured only through the rat proofing of dwellings and stores for grain and other articles which provide food attractive to rats. While recognizing that this is a very costly measure, we feel we are justified in asking that it should be accepted as a long-term objective in order to secure lasting benefits to the country. Apart from the effective control of plague that rat proofing will bring about, the economic gain to the community will be considerable. Various estimates of the loss caused by rats have been made. A conservative estimate of the annual loss to the country from this source places the figure in the neighborhood of Rs. 800 crores, a sum which would more than suffice to finance our entire health programme for the first ten years.

6. Rat proofing should, in the first instance, be carried out as far as possible in the endemic centers of plague and should later be extended all over the country.

7. While the carrying out of this suggestion must necessarily be spread over a comparatively long period of years, we would suggest

that the seasonal measures for rat control, which we have recommended in the section on plague, should be carried out in order to keep down the growth of the rat population.

Fly Control

8. The domestic fly will continue to be a menace to the public health until the level of general sanitation in towns and in the countryside improves considerably. The satisfactory collection and disposal of the dung of animals and of other refuse are essential to produce the desired improvement. We have already dealt with the question of general sanitation and shall not, therefore, repeat here the steps that we suggest should be taken.

9. The danger from the fly as a carrier of disease will decrease in proportion to the extent that the programme of night soil conservancy through an extension of the water carriage system and through the construction of latrines, which we have advocated elsewhere in this report, becomes implemented.

10. The control exercised by most municipalities in India over the manufacture and sale of articles of food, including dairy products, and over the sanitation of stables and cattle yards is quite ineffective. These local bodies have, under their self-government Acts, adequate powers to exercise the necessary control. Their neglect of this duty is, in a large measure, responsible for fly-breeding and for the dissemination of diseases carried by flies in the areas under their charge. We hope that the proposals we have set out in Chapter XVII for improving the standard of local health administration will if carried out, help to remedy to a large extent the existing state of affairs.

11. There is evidence from England and America that the replacement of animal driven vehicles by motor transport has contributed to a remarkable reduction of flies and of the incidence of fly-borne diseases such as dysentery and diarrhea. We do not anticipate the disappearance of draught animals from the roads in India for many years to come, but there is the possibility of a steady increase in motor transport in the larger urban centers and later in the country as whole and such developments will lead to a reduction of the fly population.

12. Apart from the measures directed against the breeding of flies we recommend that active steps should be taken for the destruction of adult flies by the use of potent insecticides such as D. D. T. and pyre thrum.

CONTROL OP CERTAIN TRADES, INDUSTRIES AND OCCUPATIONS DANGEROUS AND OFFENSIVE TO THE COMMUNITY

The Present Position

1. Some of the provincial Local Self — Government Acts *(e.g.,* the Madras District Municipalities and Local Boards Acts and the Bengal Municipal Act) give power to local authorities to control certain trades industries and occupations which may prove offensive or dangerous to the community and which are specifically mentioned in those Acts. Provision for such control has been made by the prohibition imposed on the carrying on, by any person, of such trades and occupations within the area of a local authority before obtaining a license from that authority. By the incorporation of

suitable conditions, the local body concerned can regulate the functioning of these dangerous and offensive trades in the interests of the health and general welfare of the community. For instance, the Bengal Municipal Act provides for the control of a number of such trades which include: —

(1) Slaughter of animals, their skinning and disemboweling for purpose other than human consumption;

(2) storing hides, fish, horns or skins;

(3) boiling or storing offal, blood, bones or rags;

(4) melting tallow;

(5) tanning or the manufacture of leather or leather goods;

(6) oil-boiling;

(7) soap-making;

(8) dyeing;

(9) burning or baking bricks, tiles, pottery or lime;

(10) storing kerosene, petroleum, naphtha, or any inflammable oil-or spirit;

(11) trading in or storing for other than domestic use, hay, straw wood, thatching grass, jute or other inflammable material; and

(12) any manufacture, process or business from which offensive or unwholesome smells or offensive noises may arise.

2. In practice the control exercised over such trades by local authorities leaves much to be desired. The fact that a proportion of the revenue of municipalities is derived from the grant of such licenses, and pressure from vested interests have, it is believed, been responsible for the laxity that exists in the enforcement of the law.

RECOMMENDATIONS

3. While the measures required for the control of each of these trades and industries will naturally vary to some extent they should, in general, aim at the regulation (1) of the location of these trades and industries, (2) of the specific processes in individual cases if there be any risk involved in them to the health of the worker, (3) of the general sanitation of the factory so as to provide as hygienic an environment as may be practicable and (4) of the quality of the trade wastes issuing from the factory premises, in order to ensure that their disposal on land or in any large body of water does not produce effects detrimental to the health and welfare of the community

(1) *Control of Location.*—Some of these industries which cause the emission of offensive smells such as tanning and the boiling of blood, offal and bones should be permitted to operate only at a sufficient distance from inhabited areas to prevent their causing nuisance or their becoming a danger to health. Their location should therefore be restricted to special areas. Other trades, such as the storage of inflammable articles, should not be permitted in the densely populated areas.

(2) *Control of processes involving risk to the health of the worker.*— Such risk arises mainly, from the possibility of contracting industrial diseases, an example being anthrax in tanneries. We recommend that special rules should be made to protect the workmen in such

trades. The subject of industrial disease has already been considered by us in the chapter dealing with industrial health.

(3) *Control of the general sanitation of the factory.*—This subject has also been dealt with in some detail in the chapter on industrial health and we need not, therefore, go over the same ground again.

(4) *The treatment of trade wastes and their disposal.*—In dealing with river and beach pollution and with the general sanitation of rural and urban areas we have already recommended that, as the treatment and disposal of trade wastes present many technical problems, the Water and Drainage Boards, suggested by us, should offer advice to Governments on these matters, and that the latter should issue such general and specific instructions as may be required to deal with these problems.

4. Local authorities already possess sufficient powers to deal with these trades and industries. The application of these powers to -control such trades will be facilitated by the implementation of our proposals for health development, which include provision for improving local health administration and for placing, at the disposal of the authorities responsible for such administration, suitable technical advice in respect of different problems as they arise and a technical staff competent to translate such advice into effective action

5. In view of the fact that we have discussed many of the technical aspects of this subject in other parts of the report we have dealt with it here only briefly. We would at the same time stress the urgent importance of adequate action by local health authorities to control such trades and industries in the interests of the public

CHAPTER XV

QUARANTINE

1. We have discussed at some length the problems of international and internal quarantine from the point of view of India in our review of the subject in Volume I of this report.

International Quarantine

2. As regards international quarantine there are two aspects requiring consideration. One is prevention of the export of infection in respect of the diseases recognized under the International Sanitary Conventions and the other is that of protecting India from the possible introduction of diseases such as yellow fever, sleeping sickness and others from which the country is at present free. In regard to both, the measures now in force in India are considered reasonably complete and satisfactory.

3. We understand that the International Sanitary Conventions governing sea and air traffic are undergoing some alterations designed mainly to make provision for the changed conditions of international traffic, particularly in respect of air travel, which have come into being in recent years and will no doubt be in evidence to an even greater extent in the future. It is understood, however, that the main principles on which participation between the Governments of different countries for the control of the spread of infectious diseases has hitherto been based will continue unaltered in the new Conventions under consideration. India, while she has so far been carrying out faithfully the requirements of the existing Conventions, has not formally ratified them. We understand that the Government of India has, under active consideration, the question of ratifying the new Conventions and we strongly support their ratification.

4. We are recommending, in Chapter XVII of this volume, that the ratification of international treaties should be one among a small group of subjects in respect of which the Centre should be given the power to compel a province to fall in line with the other provinces. In dealing with problems of international health it is essential that the Central Government should be able to carry out a common policy throughout India. For instance the fact that international air lines pass through different provinces in the country necessitates action on common lines in respect of the health requirements of air ports and their surrounding areas in each case, though the latter will, obviously, be under different Provincial Governments *(e.g.,* anti-mosquito measures).

Internal Quarantine

5. Internal quarantine is concerned with the enforcement of measures designed to control the spread of infectious disease between neighboring units of administration, namely, the Provinces and Indian States. No attempt has so far been made to deal with this problem on a sufficiently comprehensive scale and no organization exists for the co-ordination of such preventative measures as individual Provinces and States may carry out in their own territories.

6. We need not go into details here regarding the legal provision under the Government of India Act, 1935, for the prevention of the

spread of infectious diseases from one unit of the federation to another. The matter has been dealt with in some detail in our review of the subject in the previous volume. We would, however, emphasize that the need for controlling the spread of epidemic diseases from one part of the country to another is so great that considerations based on the desire to maintain intact the principle of provincial autonomy should not prevent the carrying out of any changes, which may be required in the existing law.

7. It may not be out of place, in this connection, to examine the way in which internal quarantine measures are carried out in the United States of America. In that country each State is sovereign within its own territories so far as internal health functions are concerned. But control of the interstate spread of disease is the responsibility of the Federal Government and of the Federal Health Service. To quote from Smillie's Public Health Administration in the United States" (1943), "the Federal Health Service has control of sanitation in interstate traffic Supervision of the sanitary facilities of interstate vehicles is a responsibility of the Federal Government. Ships on the Great Lakes and the waterways, as well as railroad trains, are included, and special attention is given to their water-supply and sewage disposal systems". The Federal Government assists the States in the control of communicable diseases and at the request of a State, the Federal Public Health Service sends trained personnel from its establishment to aid in the suppression of any serious outbreak of epidemic disease within the territory of that State Among the special measures undertaken by the Division of Domestic Quarantine of the Federal Public Health Service may be mentioned rat control to prevent plague, sanitation of the vessels engaged in interstate traffic and stream pollution where interstate interests are involved. We have described in some detail these internal quarantine duties of the Federal Administration in the United States because we feel that, in developing measures for the control of the spread of infectious diseases from one unit of administration to another in India, the practice in force in the United States can with advantage be adopted here, with such modifications as may be necessary to suit Indian conditions.

8. In the light of the discussion in the preceding paragraphs we make the following recommendations:—

(1) As in the case of the United States, the Central Government should be responsible for the enforcement of all measures necessary to prevent the inter provincial spread of infectious disease. We have already indicated briefly the steps which are taken in that country by the federal authorities for controlling the interstate
spread of such diseases. If the existing law in India requires modification in order to enable the Centre to carry out these duties, such modification should be brought about as soon as may be practicable.

(2) As has been explained elsewhere, we desire to see that occasions for intervention by the Centre in the internal administration of a Province should be minimized as far as possible. To secure this end we have suggested the establishment of an organization, the Central Board of Health, consisting of the Central and Provincial Ministers of Health and have recommended that normally all provincial matters, which may require intervention by the Centre, should first be discussed by the Board in order to secure the largest possible

measure of agreement in respect of the action required to be taken. Where urgency demands immediate action, we have suggested that the Central Minister should report the matter to the Board with the least practicable delay. We believe that, if the proposed procedure can be followed, the possibility of friction between the Centre and the Provinces will be considerably reduced.

In the sphere of internal quarantine we would recommend that the Board should draw up, in consultation with the health advisers at the Centre and in the Provinces, a memorandum of instructions to be followed by the Central and Provincial Health Departments in order to promote the effective control of the spread of infectious diseases. Occasions requiring co-operative action by the Central and Provincial Health Departments will include, among others, (a) large festivals in individual provinces, which attract pilgrims from other provinces, (b) outbreaks of epidemic disease in a province in an extensive form or, even if it be on a smaller scale, in an area close to the borders of a neighboring province, so as to constitute a threat to the latter and (c) serious calamities such as floods, earthquakes and famines whereby conditions may be created, which are favorable to the rise and spread of epidemics. Some degree of co-operation among the provinces themselves and with the Centre already exists in respect of exchange of epidemiological information and in respect of measures in connection with large festivals. But we desire to see the whole field of possible co-operation examined on a wide basis and a common programme of action drawn up under the auspices of the Central Board of Health. Into such a programme can be fitted the measures which are to be taken by the Centre, including the assistance to be given by it to the Provinces, for the discharge of its own inter-provincial quarantine functions.

(3) The desirability of creating an inter-provincial fund for carrying out the measures outlined above should be considered. To this fund Provincial Governments can contribute their share on some agreed basis. The Central Government should also make a suitable contribution, which would cover its responsibilities for the Centrally Administered Areas as well as for financial assistance towards furthering inter provincial control of the spread of infectious disease. Such a fund will also constitute an insurance for all Governments against possible disasters such as famines, floods and earthquakes.

(4) The measures described in this chapter for the enforcement of internal quarantine can hardly be effective without the active participation of Indian States. In view of the uncertainty regarding possible future developments in the constitutional sphere in India, all that we can recommend is that, by mutual arrangements or in some other way Indian States should also be brought into the scheme. We realize that it is only those States which possess 0 reasonably good health organizations that can participate in such co-operative effort. The more important of the States will probably satisfy this condition and if, in the beginning, even these can be persuaded to come in, the range of activity of the internal quarantine organization and its effectiveness will have been greatly increased.

CHAPTER XVI

VITAL STATISTICS

Introduction

1. Vital statistics constitute the foundation on which all constructive work in the field of public health must be built. Preventive and curative work can be organized on a sound basis only on accurate knowledge regarding the diseases and disabilities prevalent in any area. Such information will become available only when mortality and morbidity statistics are recorded correctly. The reports of the Royal Commission on Agriculture and of the Royal Commission on Labor both drew pointed attention to the defects of Indian vital statistics and stressed the importance of ensuring that an early improvement was effected.

2. In this chapter we shall discuss the measures that are necessary for improving the registration, compilation and study of vital statistics in this country. In its widest sense the term vital statistics includes, as has been pointed out by Sir Arthur Newsholme, "the whole study of man, as affected either by heredity or by environment, so far as the results of this study can be arithmetically stated". It is, at the same time, used in a narrower sense to denote data regarding the occurrence of certain types of vital events taking place in the community, such as births, deaths, the incidence of disease and marriages. As regards marriage no registration normally takes place among the Hindus and Mohammedans, who together constitute about 91 per cent, of the total population. Therefore, in our discussion of the methods of improving vital statistics, we shall confine ourselves to births, deaths and the incidence of disease. The organization of morbidity statistics for the community presents a difficult problem even in countries in which the development of health services has advanced much more than in India and figures for deaths, in view of their greater completeness, are generally utilized to a greater extent than morbidity figures for the study of health problems, even though the latter constitute more satisfactory material for such study. It is only when an adequate medical service covering the whole population and offering protection to all, irrespective of their ability to pay for such protection, becomes established and operates over a reasonable period of time that morbidity statistics of the requisite quality and quantity will develop. Such a comprehensive service has not yet been established even in the more advanced countries of Europe and America and its provision is only under consideration. In India our proposals aim at providing the country with" such a health service and its establishment will no doubt promote hers also the growth of a body of reliable statistics covering the field of morbidity in its various forms. For the present, however, there exist morbidity figures, although they are incomplete, for certain infectious diseases which have been made notifiable by the different health authorities in the country. Our proposals in this chapter will cover, besides the statistics relating to births and deaths from all causes, those which relate to the incidence of notifiable diseases also.

3. The application of modern statistical methods to health administration is of supreme importance. The study and interpretation

of vital statistics require the use of these methods. An essential part of sound administration is that it should produce, in all branches of its activity, data which will indicate the trend of events. The application of the science of statistics is necessary both for ensuring that the collection of such data is on sound lines and for assessing the results of administration through a study of the recorded statistics. The study of the social and biological aspects of applied medicine, for instance the investigation of socio-economic factors in relation to community health and disease or the assessment of the value of a particular drug in the treatment of a specific disease, requires the application of statistical methods for the planning of such investigations and the evaluation of their results. In these circumstances our proposals will also deal with the question of the provision of an adequate statistical service in connection with the health organization. As will be shown later, we consider that such a statistical service should- form an integral part of the administrative organization we are recommending for vital statistics.

4. The size and composition of the population, including its age and sex structure, have an important bearing on health as well as general administration. Population studies should therefore constitute an important function of the administrative organization we recommend. In addition the census, as a periodical stocktaking of the community in respect of certain types of information closely related to population and vital statistics, should also be made a function of that organization.

5. For the sake of convenience we summaries below the different •matters which will be discussed in this chapter:—

(1) Certain proposals for the improvement of vital statistics in the areas under our scheme of health services.

(2) Certain proposals for the areas which will remain outside our scheme during the earlier stages of the programme.

(3) Certain other proposals for improving vital statistics.

(4) The administrative organisations for vital statistics in local areas, at the headquarters of the Province and at the Centre.

6. Before proceeding to deal with these subjects we may describe briefly the existing system of collection and compilation of vital statistics, although we have dealt with these matters in the previous volume which gives a review of health administration in all its branches.

The Present Position

7. (a) *Registration and compilation.*—Generally speaking, in all 'municipalities the vital statistics organization is a part of the municipal public health department. Similarly, Union Boards or P*anchayats,* which are smaller units of local self-government, have also been entrusted, in certain provinces, with the task of recording and compiling vital statistics for their own areas. In rural areas the agency for registration is not the same in all provinces. In Madras Presidency the registrar is the village headman. In most other provinces he is the police officer in charge of the *thana* (police station). The average area of a *thana* varies, in the different provinces, from about 127 square miles to 420 square miles and its average population from about 78,000 to 181,000. The man responsible for reporting these statistics from individual villages is the

chowkidar (village watchman), who is perhaps the lowest grade of public servant and is generally illiterate. He reports these events to the police station in whose jurisdiction his village is situated at intervals which vary from one to two weeks in different provinces. The recorded vital statistics are passed on through a series of officers to the Director of public Health. Compilation of the data is carried out at the different stages of transmission. Madras forms an exception to this general statement and the results there have been satisfactory. Here the number of intermediary stages has been reduced. The village headman sends his report to the *Tahsildar* of the *taluk* in which the village is situated and the latter sends it directly to the Director of Public Health. Compilation of the data for the whole-province has been centralized in the office of the latter officer.

(b) *Errors,*—The errors fall under three heads, (i) incompleteness in the recording of events, (ii) inaccuracy of the registered cause of death, and (iii) faulty compilation.

8. Of these three types of errors, omissions in registration can be rectified more easily than inaccuracy in respect of the cause of death. As will be shown later, the latter can be remedied only by the provision of an adequate health service for the community. The question of compilation is bound up with the type of organization that will be provided at different levels of administration and this subject will be discussed after we have dealt with the administrative machinery.

OUR RECOMMENDATIONS

Proposals for the Areas under Our Scheme

9. While the replacement of the village *chowkidar* by a more- competent agent may not be easy of accomplishment in the near future, we believe that the proposals we have made for the expansion of health services over the country as a whole will materially assist in the rectification of the defects pointed out above.

(a) *The village committee.*—for each village we have suggested the establishment of a village committee, one member of which will concern himself with vital statistics. His local knowledge should enable him to bring on record events which might have escaped the notice of the *chowkidar* while, if he is interested in his duties he can also help in securing better registration by persistent efforts to awaken, in the villagers, a sense of personal responsibility in regard to this matter.

(b) *The primary unit organization.*—We have recommended the provision of two public health inspectors, four mid wives and four public health nurses for each primary unit and it should be a part of their function to collect, in the course of their routine duties, information regarding the occurrence of births, deaths and cases of infectious disease and to pass it on to the registrar. House to house-surveys in individual villages and the checking of the figures registered for such villages against their own findings are even now being done by the subordinate public health staff in certain provinces in order to improve vital statistics. The public health nurse and the midwife will come continually in contact with women in the homes they visit and the collection of such information should, therefore, present no difficulty for them. Further, it will be one of their functions to contact as many expectant mothers as possible and to follow

them through childbirth into the postnatal period. We anticipate that the contribution that all these officials will thus make to the improvement of vital statistics on the side of reducing omissions will, in a short time, be considerable.

(c) *The creation of four registration offices in each primary unit.*— The placing of the registering authority as close to the people as possible is desirable in order to improve vital statistics. The size of the *thana* as the unit of registration area is much too large and the weekly or fortnightly visit of the *chowkidar* to the registrar is too infrequent to prove satisfactory from the point of view of health administration. With our health organization to assist, it should easily be possible to establish four registration offices in each primary unit. One of these should be in the health centre at the headquarters of the primary unit. For the purpose of administration the unit will be divided into four circles and a public health nurse, a midwife and a trained *dai* will be located at the headquarters of each circle for work within its area. It is for consideration whether the public health nurse and midwife should not be made Registrars of Births and' Deaths in these circles. The registration office should function at stated hours on two days of the week to enable individual *chowkidarv* to attend this office at regular intervals. By locating the nurse and midwife at the same place it should be possible to ensure that one' of them is there to keep the office open on the required dates and during the stated hours. We believe that the provision of four registration offices in each primary unit should make it possible for the *chowkidar* to present the information collected by him at the registration centre at least twice a week. In Bengal, for instance the average area for a *thana* is 127 square miles while that of a primary unit is about 51 square miles. With four registration offices in the latter area it should not be difficult for a *chowkidar* to pay two visits a week or even more. From the point of reporting outbreaks of infectious diseases the gain in time secured is of the almost importance

We have suggested the employment of the above mentioned members of the Health Department as registrars with the idea of ensuring a speedy improvement in the registration of vital statistics in the areas covered by our scheme, because we feel that such improvement is fundamental to the success of the health programme. Later in this chapter we have recommended, for the areas outside our scheme, where the health organization will be much smaller in strength, the appointment of registrars with an elementary type of training. Each should have a reasonable number of villages in his charge so that he should be able to visit every village once a fortnight. Our recommendation for the area in which the health programme is being developed is of a temporary nature. The ultimate aim should be to establish a registration office, with its own registrar, for each large village or group of small villages and thus to make *it* convenient for the people to report directly at this office cases of births, deaths and notifiable diseases. This matter will be further discussed in the section dealing with the administrative organization for vital statistics.

(d) *Improvement in the accuracy of the recorded causes of death.*—For improving the accuracy of the registered cause of death

medical certification is necessary. In our view, certification of the cause of death should be a by-product, if we may so put it, of the normal functioning of an adequate medical service for the community, because a reasonably correct diagnosis of the immediate cause of death can be given only by a physician who has attended the patient during his last illness, while the recording of the remoter causes of his death will require, in addition, information regarding his medical history. No short-cut can, therefore, be devised for promoting the rapid growth of a reliable body of information regarding the true causes of mortality in the community. The completion of the long-term programme, with its relatively large provision for treatment facilities, should secure the achievement of this purpose. In the meantime it is believed that the health organization proposed under the short-term programme will help, to some extent, in improving the correctness of registration of the cause of death. The two medical officers attached to each primary unit will be able to certify, as the result of personal visits during the last illness of patients, a certain number of deaths, but these are not likely to form an appreciable proportion of the total. At the same time, by utilizing the services -of the two public health inspectors and the four nurses attached to the primary unit, it should be possible to obtain a reasonable amount of detailed information regarding individual deaths and thus to attempt to reach a more satisfactory diagnosis of the cause in each case than is possible at present on the report of the c*howkidar.* We suggest that this procedure should be adopted in respect of as many deaths as possible so that at least some improvement in this import-.ant aspect of vital statistics registration may be effected.

Proposals for the Areas outside Our Scheme

10. The vital statistics of the areas which will remain outside our scheme during the early stages of development of the health organization also require attention. Any improvement that can be made in these areas, although it be of no high standard, will help to raise the value of the recorded vital statistics for the country as a whole.

11. The question of employing non-medical personnel, with some elementary type of training, as registrars in the areas to which our health programme has not been extended merits consideration. Such training need not be elaborate. The man must be literate in his own vernacular and should be able to maintain the records entrusted to him. His training should include instruction regarding the signs and symptoms of such common infectious diseases as cholera, smallpox, plague and a few others. His range of jurisdiction should be such as he could cover in a period of about six days. He should stay in the village in which his registration office is situated three days in the week and the different *chowkidars* in his area should be allotted specific days for reporting events for registration Three other days in the week should be devoted by him to the inspection of a certain number of villages included in his area. The purpose is that, by personal enquiries, he should exercise a check on the work of the *chowkidar* in collecting vital statistics. Such supervision will undoubtedly help to improve the work of the latter. It is desirable that the number of villages included in the jurisdiction of the Registrar should be such as to enable him to visit all of them at least once a fortnight.

12. It will be seen that we are not envisaging the creation of a highly trained type of health worker. We have not even stressed the need for the middle school examination or any such standard of general education. What is required is that he should be literate in his own vernacular and should have had sufficient training to carry out the duties entrusted to him in a reasonably satisfactory manner. The results he may be expected to achieve will be rather in the direction of preventing omissions than of improving the accuracy of registration of the cause of death. The latter can be secured only through a medical agency. Such a worker should be relatively inexpensive to produce and employ; considerations which are important in view of the vast rural regions to be covered by the service. Many of the smaller towns are similar to the rural areas and a registrar of this type will perhaps suffice for such towns also. Adequate provision for the supervision of such staff is of great importance. We shall discuss this question in the section dealing with the administrative organization.

13. We have described in very general terms our recommendations for the areas outside our scheme and have not gone into such questions as the strength of staff likely to be required and the probable cost of the organization. We have ventured to make these suggestions because we feel the urgent need for attempting to secure, without delay, some measure of improvement in these areas, although such improvement may be limited to the reduction of omissions in registration. A certain amount of supervision over the work of the *chowkidar* seems to be essential if any degree of progress is to be registered.

Certain other Proposals

14. *House lists in villages and sample surveys.*—A house list is prepared for every village during the census and we recommend that it should be preserved and kept up-to-date during the interregnal period. As a permanent record it can be of great value to the different departments of Government. The list should contain information regarding the name, date of birth and sex of the head of the family and of every normal resident of the house. The occupation should also be noted, wherever it can be correctly ascertained. It should be made obligatory on the householder to give the information required for the filling of the house list, should he be asked by the appropriate authority to do so.

In a sub-continent like India the use of the sampling method is eminently suitable for the collection of demographic information of various types. Complete enumeration is the method which has been in use for successive censuses. It is cumbersome and the ensuring of accuracy in a gigantic operation of that type is not easy. On the other hand, sample surveys, devised with due safeguards, should serve the purpose almost equally well and with less expense and trouble. The provision of an accurate house list for each village will prove invaluable for such surveys which will have to include not only the selection, on a random basis, of a certain number of specific villages from the total number Inhabited by the population sampled but also the selection, on the same basis, of a number of houses in each village. It is for the latter that the house list is of special value.

We may illustrate by examples the types of information that can be secured by the proposed sample surveys. The recorded birth and death rates for specific areas and for the country as a whole are known to be inaccurate but no information is available as to the range of error that exists. Similarly, very little information exists regarding the fertility rates of women in different sections of the population in India. From the experience of other countries it seems quite likely that variation exists in this country also. Birth, death and fertility rates form the basis of all population studies and the need for their ascertainment does not, therefore, require emphasis. Sample surveys can provide information of a reasonable degree of accuracy as well as of great value in respect of all the three.

We consider the preparation of a house list for each village included in our scheme and its maintenance to be of great importance. Without it a periodical assessment of the progress achieved in the different branches of health activity will be difficult. The sampling method can with advantage be used in the different types of health surveys that are undertaken and a house list will be essential for such surveys.

It is most unlikely that the house lists prepared for the 1941 census have been preserved. A special organization will therefore be necessary to prepare these lists in the areas under our scheme. We recommend, for this purpose, the employment of an adequate temporary staff for the five primary units with which the scheme will start in each district. As a rough guide we suggest that one clerk may be employed to prepare the house list for a primary unit and to mark the houses in that area within a period of one year. One supervisor will be required to check the work of all the clerks in the five units. The total cost within the first 10 years for the eleven Governors Provinces will be about Rs. 60 lakhs but we consider that the expenditure will be fully justified.

The list for each village may be kept for safe custody in the hands of the *Patwari* or the village headman as the case may be. In provinces such as Bengal, where, owing to Permanent Revenue Settlement, no village Revenue Department organization exists, special arrangements will have to be made by the Governments concerned.

The task of maintaining the list up-to-date can, it is believed, be undertaken by the primary unit health staff during their visits to individual villages. After a time their efforts in this direction can be supplemented by those of the permanent vital statistics organization which we are recommending later in this chapter.

We suggest that two or three pages of this house list should be set apart for each house and that the information collected by sample surveys from time to time should be entered in it. The programme of reconstruction, that the Governments in India will start in the post-war period, will bring into the life of the rural community the joint efforts of the various nation-building departments which are concerned with the promotion of social welfare. We have no doubt that such departments will also have information of value to record in the house list from time to time. Thus the latter should, in due course, develop into a valuable document in which will be recorded data covering a variety of aspects of community life in the village

15. *The provision of adequate incentive for the people to register births and deaths.*—Efforts to improve the administrative machinery and thus produce an increase in vigilance on the part of the governmental staff to secure better registration cannot eventually produce the same results as an awakening of the sense of responsibility of the people to themselves and to the State for recording the vital events that take place in their homes. While the efforts of the health staff through educative work will, no doubt, contribute to this awakening, an effective method of stimulating interest will be by creating conditions requiring, in an increasing degree, the production of proof of age, community, parentage etc. If courts, schools and other institutions could be induced to insist on the production of birth and death certificates, the public will begin to feel the necessity for registering births and deaths in their own interest.

16. *Notifiable diseases.*—There are considerable variations in the number of communicable diseases which are notifiable in the different provinces. For instance, in the Central Provinces their number is about 22, in the Punjab 20 and in the North-West Frontier Province about 7. There do not exist, even in the larger cities, adequate facilities for ensuring that some of these diseases, for example tuberculosis, will be notified in sufficient numbers to ensure that a substantial proportion of the actual occurrences will be brought on record. Existing provision for diagnosis by a medical man and for laboratory aid towards such diagnosis is so meagre in most parts of the country that legal provision requiring the notification of such diseases as cerebral-spinal fever, typhus, typhoid and relapsing fever appears to us to serve little or no useful purpose. These diseases are notifiable in both rural and urban areas in a certain number of provinces. The making of diseases such as sprue and scarlet fever (the latter is quite rare in this country) generally notifiable over a province has, in our view, no justification at all.

We would advise the provincial health authorities to consider seriously the question of revising these lists. Taking into consideration existing facilities, there should be three lists, one for the rural areas and towns under 30,000 population, a second for municipalities from 30,000 to 50,000 inhabitants and the third for all towns and cities above this population. For the first the list should be quite short. Our idea is that there is justification for including in it only such diseases as cholera, smallpox, plague, measles, malaria and a few others with which the people are familiar. The other two lists should include diseases requiring greater medical skill and laboratory facilities for diagnosis, the list for towns above 50,000 containing a larger number than the list for towns with a smaller population.

17.' *Compulsory registration of vital statistics.*—In a Memorandum on Indian Vital Statistics, which was discussed by the Central Advisory Board of Health in 1939, it is stated, "There is little double that the more general introduction of compulsory registration would have considerable effect in this direction (improvement of vital statistics). Moreover, even in those areas in which registration Is compulsory, little or no notice is taken of breaches of the law and a few judiciously selected prosecutions would have a salutary educational effect." As far as we are aware, the position remains practically unchanged. We consider that, in the areas in which our scheme will be introduced, the registration of vital statistics

Should be made compulsory along with the introduction of the scheme wherever such provision does not already exist in other areas too compulsion should be introduced gradually. We further consider that the enforcement of the law through the prosecution of offenders is essential if definite improvement is to be secured.

ADMINISTRATIVE ORGANISATION

18. Before formulating our proposals in this connection, there are certain preliminary matters requiring consideration.

(1) Records of births and deaths have a wide range of usefulness and most departments of Government, at one time or other, make use of them. For instance, developmental programmes in such fields as education, agriculture, industry and food must take into consideration the population and its age and sex composition both at present and for many years to come. Estimates providing the required information can be based only on reasonably correct vital statistics. While therefore governmental activity in its varied forms is interested in vital statistics, it is perhaps the Health Department that is most intimately connected with it. It is with the child or the grown-up individual that the other department's are-concerned, while births and deaths as events are of supreme importance to the health organization. The modern conception of a health service includes the provision of adequate protection to every individual from the prenatal stage through childbirth, childhood, adult life and old age to death. Under an ideal health organization every childbirth will receive such skilled assistance as may be required from the appropriate type of health worker and no death will take place, except as an accident, without a reasonable measure of medical aid being administered to the individual.

In these circumstances, it seems to us that the close association of the Health Department with the vital statistics organization is of fundamental importance. Completeness of registration and an accurate recording of the cause of death will be secured only through the co-operation of that department. Even so, we consider it un-desirable and unwise to combine the vital statistics organization and the Health Department either during the short-term programme of health development or in the more distant future. During the former period the village *chowkidar* will have to continue as the reporting agent. He is a servant of the Revenue Department and is responsible for discharging a variety of functions besides reporting vital statistics. This in itself makes it impracticable to transfer the administration of vital statistics to the Health Department. our recommendation for the creation of four registration offices in each primary unit and for making certain health officials Registrars of Births and Deaths has been made solely for the purpose of ensuring an improvement in the vital statistics of the areas concerned simultaneously with development of the proposed health organization and, as will be shown later, this arrangement will be of a purely temporary nature.

We realize that the functions of the new Vital Statistics Department we are proposing include such matters as the census and various types of demographic studies. These, however useful they may-prove to be to the Health Department by throwing light on various

aspects of its own problems, fall clearly outside its legitimate functions. Therefore, the Vital Statistics Department should in our view-function as a separate department with its own provincial administrative officer and subordinate officers in the districts. This is the type of organization we shall recommend presently. We must, at the same time, stress the need for the closest possible co-operation between, the two.

(2) We emphasized the importance of providing statistical assistance to the Health Department in its day-to-day administration as well as in the undertaking of various types of health studies. A point for consideration is whether this organization should form an integral part of the Health Department or whether it would be advantageous to associate it, at least at the provincial level, with the Vital Statistics Department. For reasons which will be set out clearly later, we consider that the latter is the more desirable procedure.

(3) There is an astonishing variation in the quality and quantity of the vital statistics recorded in different parts of the country. Abundant evidence exists indicating that these variations are largely due to differing degrees of incompleteness in registration. We there fore feel that measures for securing a reasonable degree of uniformity among the provinces in respect of registration and compilation of vital statistics are essential.

The responsibility for ensuring such uniformity should rest in our view on the Central Government. In dealing with the functions of the Central Ministry of Health We emphasized the importance of its assisting, through grants-in-aid and technical advice, the development of schemes in the Provinces for the promotion of health in all directions. We feel that improvement of vital statistics is one of the spheres in which such help from the Centre to Provinces is urgently needed.

Mr. Yeatts, the Census Commissioner, pointed out to us that the problem of variation in standards was not peculiar to India and that the question presented itself, sometime back, in an acute form in Canada and in the United States of America. In both countries it was solved by the Centre entering the field through financial assistance, prescription of standards and a constant effort to encourage the constituent States to work up to these standards. Our recommendation is, therefore, based on well-established practice which has proved its usefulness elsewhere.

In the light of the considerations referred to above we may proceed to set out our recommendations. In doing so we shall start with the organization associated with the Central Government and work our Way down to the local areas: —

The Central Organization

19. Mr. Yeatts described briefly to us the two types of organization that had been evolved at the federal centre in Canada and the United States. In the former the view is held that the statistics of the different departments of Government should be brought together and that they should be looked upon as a coordinated whole. In Canada therefore the statistics relating to the different departments pass through an officer called the Dominion Statistician. It is

reported that the system has worked well but, under it, the directional head would require to be a man of considerable experience and ability in order to determine what items of information should be discarded and what insisted upon. In the United States there is a Bureau of the Census which, although its primary function, as its name implies, is to handle data bearing on population, deals -also with vital statistics. Individual departments have their own statistical organisations. Some years ago it was found essential to appoint a Central Statistics Board to bring the various departmental organisations together and to impose common principles of standards -and co-ordination. This Board has, we believe, been merged in. the Bureau of the Budget but the principle of observing common Standards and of co-ordination is still, we understand, being applied.

For India we consider the Canadian model of a single statistical officer, under whose review must pass the statistics of all departments, is hardly practicable, as the strain on the individual would become unbearable. The population of this country is about sixty times that of Canada and the volume of statistical material to 'be dealt with here will consequently be so much greater by comparison as to make the Canadian example inapplicable to India. At the same time, we are of the opinion that the census, population studies and vital statistics should be handled together in view of their intimate relationship. This, we believe, is the position in the United 'States. We prefer, however, to substitute for the United States organization, namely the Bureau of the Census, an officer with the title of Registrar General of Vital and Population Statistics.

There is the need, as in the case of the United States, for a Committee to co-ordinate the functions of the different statistical organisations that will be maintained by the Central Government. We understand that such a Committee already exists or that its constitution is actively under consideration. We recommend its establishment as soon as possible.

The Registrar General will be responsible, under the administrative control of the Central Ministry of Health, for carrying out the following functions in regard to vital statistics and health studies which we have included in Chapter XVII of this volume of the report, among the functions of that Ministry:

"To collect, tabulate and publish the vital statistics of the various component parts; to undertake a periodical census at such intervals as may be laid down by law; to direct the organization and the carrying out of statistical studies in any part of the country designed to throw light on any aspect of the health problem."

In addition to these functions he should prepare an annual report on the population of India incorporating such information as is available regarding existing conditions and possible tendencies for the future. It is essential that the Registrar General should be able to express his views freely. The published report should therefore reproduce the independent professional views of that officer, with such comments as the Central Government may deem necessary to make on these views. The Registrar General should have the right of direct access to the Minister to whom he is attached and of free communization with other departments of Government.

It follows from an enumeration of his functions that he should be attached to the Ministry of Health and not to any other department of the Central Government. He will work independently of the Central Health Department but in close co-operation with it.

20. *Qualifications of the Registrar General.*—A scientific background including, if possible, special training in statistics is most desirable. In addition, he should be a man of personality with powers of direction and administration and capable of initiating and developing methods to improve vital statistics taking into consideration the special circumstances of the country.

21. *Provision for statistical advice to the Central Health Department.*—We suggest that provision for statistical help to the Central Health Department in its day to day administration or in the carrying out of special investigations may be made by creating a 'medical section' in the Registrar General's office. This section, which will consist of statisticians and whose budget will be part of that of the Central Health Department, will be located in the Registrar General's office for the purpose of securing the technical supervision of that officer. The functions of the latter, consisting as they do of vital statistics, population studies and the census, are all of interest to the Health Department. Further, in the investigation of the Department's own problems, the reservoir of statistical material available in the Registrar General's office may often prove to be of great value and sometimes even essential. In these circumstances we believe that the location of the medical statistical unit in the Registrar General's office will be of definite advantage to the Health Department.

The Organization at the Provincial Headquarters

22. The provincial statistical organization should correspond to that which we have proposed for the centre and the functions of the provincial officer in charge should be similar to those of the Registrar General. The designation of the provincial officer may be, it is suggested, the Provincial Registrar of Vital and Population Statistics. He should be attached to the Provincial Ministry of Health for administrative control and should work independently of, but in close cooperation with, the Director of Health Services. He should be responsible for the administration of the provincial Vital Statistics Department and should, like the Registrar General with the Central Government, publish an annual report on similar lines.

The provision of a 'medical section' in the office of the Provincial Registrar for the same functions as those enumerated in connection with the Central Health Department is also necessary.

The District Organization

23. This we may consider under two heads, namely, (1) the organization desirable as a long-term measure and (2) that which is necessary for the immediate future.

(1) *Long-term.*—For determining what should be the ultimate form of the vital statistics organization in the districts it is desirable to keep the following considerations in view: —

(a) Events taking place in a family should be reported by a member of that family and not at second or third hand, as is now

being done by the *chowkidar.* First hand reporting can alone ensure a reasonable measure of accuracy.

(b) This postulates that the registration office should be placed as close to the people as possible. As has already been pointed out earlier, every large village or every group of small villages must have its own registration office.

With four registration offices in each primary unit the possibility of introducing first hand reporting should be investigated in the areas under our scheme even during the short-term programme.

(c) The registrar must be trained for his work and he should, besides attending his office at stated hours, inspect the area under his jurisdiction in order to ensure that unregistered events, if any are brought on record. He will therefore have to be a full-time public servant.

We have emphasized, earlier in this chapter, the importance of making compulsory, by stages, the registration of vital statistics in those areas in which such a provision does not exist at present. We are confident that the enforcement of the law and the development of an attitude of responsibility among the people for the reporting of the vital events taking place in their homes, through the measures we have recommended, will together promote a gradual approach towards completeness of registration. Nevertheless we believe that, for a long time to come, the outdoor work of the registrar will constitute a valuable aid towards eliminating omissions in registration and that such inspections by him cannot therefore be dispensed with.

(d) There is no need for a large-scale provision for the supervision of these registrars. Under the long-term programme, when our health services will have extended over the country as a whole, the reporting: of births, deaths and cases of notifiable diseases to the registrar should prove to be practically complete if, through the issue of executive instructions or through legal provision, such reporting can be made a function of certain members of the health services such as mid-wives, public health nurses and doctors. Even now, in many municipalities, mid wives are required to report to the health authority such births and medical men such cases of infectious disease as come within their cognizance during the course of their professional duties. Similar provision in respect of the members of the Health Department of the future will not therefore constitute a departure from existing practice. In these circumstances the main function of the superior administrative staff of the Vital Statistics Department in a district will be to ensure, by touring and inspection that the large number of registrars distributed over the whole area carry out their function of registration properly. In addition there will be the normal administrative duties associated with the maintenance of such an organization.

Taking into consideration the points discussed above we consider that, as a long-term measure, the district organization will consist of a District Registrar of Vital and Population Statistics with a certain number of Assistant Registrars located in suitable places in. the district. Their number is not likely to exceed six or seven.

(2) *The immediate future.*—We must take into account the fact that, during this period, the village *chowkidar* will continue as the

reporting agent and that control over him is vested in the Revenue Department. We must also take into account our proposals for the appointment of registrars with an elementary type of training in the areas outside our scheme. Adequate supervision over the latter will have to become immediately the responsibility of the district vital statistics organization.

As regards the area under our scheme the registrars will be, in the beginning, members of the health department. But this system need not continue beyond the first ten years. At the end of this period the registration offices in these areas should also pass under the control of the Vital Statistics Department. The latter should, in the meantime, have had some experience of training and supervising the work of registrars in the areas outside our scheme and an extension of the same system into the areas in which the health staff have been carrying on this function should, in our view, present no difficulty. Even after such transfer there should be the closest co-operation between the Vital Statistics and Health Departments.

In the circumstances discussed above we recommend the appointment of a District Registrar and two Assistant Registrars in the immediate future. These officers are likely to find their hands full during the early years with the organization of the work of the new department in the areas in which our scheme will not be working. For this reason as well as for the fact that dual administrative control is undesirable, we suggest that the work of the health department registrars should be supervised by their own superior officers in that department. It will be remembered, in this connection, that even now registrars of vital statistics in municipal areas are, generally speaking, attached to the municipal health department in the different provinces. This proposal of ours is therefore not without precedent. The weekly, monthly and other returns and reports which these registrars should submit will go, through their immediate superior, the Medical Officer in charge of the Primary unit, to the District Registrar.

The District Registrar and his Assistant Registrars should be qualified statisticians because they will constitute the staff through whom the Provincial Registrar will have to carry out his investigations in vital statistics and population problems as well as organize and conduct the periodical census. We realize that, in the early stages, it may not be possible to obtain statisticians in sufficient numbers.

The District Registrar will require the close co-operation of the Revenue Department. Indeed, we have in Chapter XVII of this volume of the report emphasized the need for the closest co-operation between all departments in a district whose work has a bearing on its health progress and have expressed the hope that the Collector or the Deputy Commissioner, as the case may be, will be able to secure coordinated effort on the part of all district officials so that advance on a broad front may be ensured.

The question of statistical assistance to the district health organization remains to be considered. It is of the utmost importance to provide, from the very beginning, for the recording of all relevant data in respect of all branches of health administration. Most of this information will be collected on uniform schedules prescribed by the Director of Health Services with the assistance of the "medical

section" in the Provincial Registrar's office. In addition, there may be, in individual districts, certain types of information collected in respect of local problems. All this information should be properly compiled and studied from the beginning. The type of work to be performed is likely to be in the nature of compilation and other forms of elementary statistical treatment. For special investigations help should always be forthcoming from the statistical organization at the disposal of the Director of Health Services. We therefore feel that, at least in the beginning, it will be sufficient if the officer in charge of the District Health Services is given a Statistical Clerk with some training in elementary statistical methods, with an Assistant if the volume of work justifies this. In view of the intimate association that this work has with district health administration, we consider that the statistical clerk proposed should be attached to the District Health Department and not to the District Registrar.

We consider the proposals set out in the preceding paragraphs as the most effective for the purpose of organizing the registration, compilation and study of vital statistics in the country but recognize that, in view of existing arrangements, it may be some time before full effect can be given to these recommendations. It is, at the same time, essential that, in the areas under our scheme, our proposals for the improvement of vital statistics should be given effect to simultaneously with the introduction of the new health organization.

Compilation of Vital Statistics

24. It has been the experience that the greater the number of stages at which compilation takes place the more will be the chance of mistakes. In Madras compilation was centralized, some years back, in the office of the Director of Public Health and the results have been satisfactory. In 1939 the Central Advisory Board of Health recommended that this procedure should be adopted by other provinces. The mistakes produced by local compilation in the past have been partly due to the fact that the staff employed has had no special training in dealing with figures and that supervision has either been absent or quite inadequate. In view of the highly trained superior staff we are recommending for the Vital Statistics Department we suggest that the first stage of tabulation may be in the office of the District Registrar. From there the figures will pass on to the office of the Provincial Registrar. Efficient and speedy tabulation requires the use of modern calculating machines and a multiplicity of compilation centers will increase expenditure on such machines. At the district headquarters the provision of such equipment for statistical work is of great importance because we anticipate that the District Registrar will be called upon to undertake investigations and carry out statistical studies of a relatively high order.

As has already been pointed out the vital statistics returns from the primary units in the areas under our scheme will also go to the District Registrar for compilation.

Provision of Training Facilities for Statisticians

25. The proposals set out in this chapter require the employment of a large number of trained statisticians. In addition the demands for such personnel on the part of other departments of Government, which are concerned with post-war reconstruction, will also be great.

In the west, industry is also absorbing statisticians because the employment of modern statistical methods is found to be of value in determining uniformity of standards of production. This tendency will sooner or later develop in India also. We therefore feel that the need for organizing facilities for statistical training in this country is urgent. We put forward the following suggestions for consideration by the authorities concerned. We must, however, state at once that we have not given the subject the consideration that it deserves and that our proposals are not based on a review of all the facilities that may exist in different parts of the country. Even so we hope that our suggestions may prove to be of some value.

(1) The Indian Statistical Institute in Calcutta possesses facilities of a high order. Under the leadership of Professor P. C. Mahalanobis, F.R.S., a body of keen and efficient workers in the field of statistics has grown up and some of them have already made valuable contributions to the theory of statistics. The Institute has a valuable-library and its experience in the sphere of statistical field studies is extensive. It has been conducting, for a certain number of years, different courses of training and examinations in the subject. This institution therefore seems to be eminently fitted for development as-a centre for statistical training.

(2) We understand that, under the auspices of the Imperial Council of Agricultural Research, courses of training for different types of statistical workers, with a special bias towards agriculture, are being organized. It may thus be possible to develop another training centre in Delhi which, we suggest, may be associated with Delhi University.

(3) As regards statistical work in the field of health, we recommend the creation of a Chair of Statistics in the proposed All-India Medical Institute. The Delhi health organization with its field training facilities will make it possible for practical instruction to be combined with the theoretical training given at the Institute. The All-India Institute of Hygiene and Public Health, Calcutta, and the Singur Health Centre can also provide similar training facilities for North-eastern India.

(4) As in other fields of education, the ultimate responsibility for developing instruction in statistics must be with the universities.. We understand that certain universities have recently provided facilities for training in statistics. We consider it desirable that steps should be taken without delay to develop the teaching of statistics in the universities, where such facilities do not exist, and that provision should be made for the highest possible type of instruction. The services of a few statisticians of standing from abroad, If necessary, should be secured on short-term contracts and suitable selected candidates from India should be sent for overseas training, in order to ensure that the development of these facilities at the universities is proceeded with expeditiously.

CHAPTER XVII

ORGANISATION AND ADMINISTRATION

1. In Chapter III, we discussed briefly the structure and functions of the health organisations we propose for assisting the Ministries of Health at the Centre and in the Provinces and for carrying out health administration in the districts. We referred also to their interrelationships. These subjects will now be considered in greater detail. In doing so, we desire to avoid, as far as possible, traversing the ground already covered and shall, therefore, refer to the points raised in Chapter III in the briefest manner possible. The purpose of making such a reference is to secure completeness of presentation of the matters under consideration. The points we stressed in Chapter III are restated below:—

(1) It is of fundamental importance that the development of the future health programme should be entrusted to Ministers of Health, Central and provincial, who will be responsible to the people and pay full regard to public opinion.

(2) The task of developing the health programme is of such magnitude that it is considered essential to have a separate Minister to deal with this subject alone both at the Centre and in the Provinces.

(3) The Ministry of Health, Central or Provincial, should be the ultimate authority responsible for all health services operating within its jurisdiction. It should lay down minimum standards of health administration for those services which are within the immediate control of other departments *(e.g.,* railways, prisons, education, etc.) and should endeavor to see them enforced.

(4) There should be the closest possible co-operation between the Ministry of Health and other departments of Government in order to promote the pooling of all available facilities, curative and preventive, in the interests of efficiency and economy.

(5) The Ministers of Health, Central and Provincial, should have the advice and guidance of technical experts in the planning and maintenance of the health services. We recommend the creation of standing councils of experts, at the three levels of Central, Provincial and local area administrations. These councils should consist of representatives of the medical, dental, nursing and other professions from which the health services will be drawn.

Our proposals regarding these councils will be set out in greater detail later in this chapter.

(6) The Minister of Health at the Centre or in a Province should have a technical adviser who will function under him as the single administrative officer for the control of the curative and preventive departments of health. We consider this unification of functions in one administrative officer as fundamental to the success of the future health programme. We have stressed, in more than one place in this report, the importance of dovetailing remedial and preventive measures, wherever possible. The same unification of functions in the administrative sphere is essential throughout the lower levels of administration in each district. Our recommendations regarding the health organisations for the short and long-term programmes, which have been described in the two previous chapters, are based on this principle.

We suggest that the technical adviser under the Central Ministry may be designated the Director-General of Health Services and the Corresponding officer in the provinces, the Director of Health Services.

The choice of suitable incumbents of these posts at the Centre and in the Provinces is all important. This subject and other relevant matters will be discussed in greater detail in that section of the present chapter which deals with the recruitment, conditions of -service and administrative control of the health services.

(7) The relationship between the Centre and the Provinces in respect of health administration requires careful consideration. The •distribution of health functions under the Government of India Act, 1935, has transferred medical relief, public health and most of the duties, which vitally affect the health of the community, to the provinces and, in such matters, the Centre has no powers of intervention. The functions of the Government of India are mainly confined to India's international health obligations and to the administration of health in the areas for which the Centre is directly responsible under the Act. The principle of decentralization was accepted by the Government of India about thirty years ago. In their Resolution, Department of Education (Sanitary Nos. 888—908, dated the 23rd May 1914, the Government of India announced that it was its policy to keep the control of research under itself but to decentralize other branches of public health administration. The principle received legislative sanction in the Government of India Act of 1919, and in 1935 the position was made clearer in the new Government of India Act by the retention of the *status quo* in respect of the health subjects transferred to the Provinces in 1919 and by the conferment on Provincial Governments of a measure of autonomy which was not provided in the earlier Act.

While the main functions (legislative and executive) in regard to 'health administration are entirely within the purview of the Provinces, there is provision for concurrent legislation by the Central and Provincial Legislatures in respect of certain subjects, such as the medical profession, factories, labor welfare including industrial health insurance and prevention of the extension from one unit of the Federation to another of infectious diseases or pests affecting men, animals or plants. The executive authority in respect of all the subjects in the concurrent field of legislation is vested in Provincial Governments. For some of these subjects, however, (which include factories, labor welfare and inter-provincial spread of infectious diseases) any Central Act that may be enacted can vest power in the Central Government to issue directions to the Provinces regarding the execution of the provisions of that Act. In the event of failure on the part of a Province to carry out such directions, however, the procedure for enforcing performance is not quick and effective enough to ensure prompt and energetic action in such matters as the inter-provincial spread of infectious disease.

2. It is against this background of the existing relationship between the Centre and the Provinces that we must consider our proposals for the development of a comprehensive health programme. We are proceeding on two basic assumptions. The first is that there may be one or more self-governing units in the country and the second is that the component parts of individual units will have the largest measure of autonomy consistent with the interests of the whole of which they form part.

3. It will be helpful to discuss briefly the conditions which, in our view, are essential for the successful implementation of our scheme. Our proposals demand a wide departure from present day methods of health administration and professional education. If satisfactory-results are to be achieved, it is our considered opinion that mutual consultation and active co-operation between the Centre and the Provinces should be promoted to the utmost extent possible. It is eminently desirable that the health programme should develop, as-far as practicable, on fairly uniform lines in the different provinces. This postulates an agency which will assist co-ordination and, in our view, the Central Government is the proper authority to fulfill this role. Our report can provide only the main outlines of the picture of future health administration. Many details have to be filled in, certain alterations have to be made to adapt our proposals to local conditions and the new scheme has, in its application, to be integrated as far as possible with existing health services. As regards the training of future doctors and other health workers, our recommendations provide for a departure from existing methods. In the circumstances, action by the Central Government on the lines Indicated below seems to be desirable in order to give an impetus to the development of the health programme throughout the country.

(1) The Central Government should demonstrate in a selected area the application of all our proposals in the various fields of health activity Some of us are of the opinion that this demonstration should be carried out in the Delhi Province, while others would leave the selection of the area to the Government of India. Such a demonstration centre is considered essential for developing administrative technique suitable to our programme of health services and to indicate how the new ideas can be incorporated in the training programme for medical and other health workers. The results achieved in this demonstration centre should be of great value to the provinces, while the training facilities made available here can also serve an all-India purpose, at least in respect of certain types of personnel.

(2) The Centre should help the provinces with grants-in-aid for the promotion of specific lines of health activity.

(3) The Central Government should provide, when a province so requires, the services of specialists in different branches of health administration, in professional education and in research. We shall deal with the subject of the provision of aid to the provinces from the Centre in greater detail later in this chapter.

4. In addition, we consider it essential that machinery should be established for promoting consultation between the Centre and the Provinces in the formulation of health policy and in its execution with the least possible friction.

5. Can these objectives be achieved within the framework of the existing constitution and the specific division of functions between the Centre and the Provinces which that constitution has established? We believe that, in a large measure, these objectives can be achieved by the 'development of proper administrative procedure and thereby of conventions which will deter ' any 'fundamental' departure from.

approved practice either on the part of the Centre or of a Province. In coming to this conclusion, we are guided mainly by the consideration that the principle of autonomy of provinces in health matters which has been accepted and followed for sometime past, should not be set aside unless it can be shown that a reversal of this policy is essential for the development of the national health programme. It must be remembered that Certain provinces have populations and areas ' larger than those of many European countries, and local health problems are, therefore, likely to be of such magnitude that they can be dealt with satisfactorily only when Provincial Governments possess a large measure of freedom to experiment and learn by the method of trial and error. In a subcontinent of the size of India, it seems almost certain that progress on sound lines cannot be made through an administration based on a highly centralized authority which may not secure the active co-operation of the provinces. In our view there will be so much opposition to a resumption of control by the Centre that it will become difficult to create and maintain that atmosphere of goodwill, which we consider essential for the success of our scheme.

6. At the same time, we realize that the existing constitution does not provide for speedy and effective intervention by the Centre even in circumstances in which dereliction of duty by a Provincial Government jeopardizes the health not only of those under its charge but also of those living in areas outside its jurisdiction. Health activities fall broadly into one or other of the following groups, (1) those in which action should be purely provincial, (2) those which require coordination of provincial activities by the Centre, (3) those in which the Centre may exercise powers delegated to it by a province and (4) those in which the Centre should have power to take direct action in a province or provinces in the interests of the country as a whole. Examples of the last group are occasions when the Centre should take action to prevent the inter-provincial spread of communicable diseases or to compel a province to fall in line with the rest of the country in regard to international treaties.

7. We presume, however, that, if our suggestions regarding the provision of grants-in-aid and technical assistance to provinces by the Centre can be carried out and if suitable machinery can be devised for mutual consultation and co-ordination of effort in the development of the health programme occasions for intervention by the Centre, even in the limited sphere suggested above, should prove to be exceptional. Towards the development of such co-operation we are suggesting the creation of a Statutory Central Board of Health, which will be responsible for discussing and forming health policy and for promoting its implementation with the least possible friction between the Centre and the Provinces. Even so, we cannot help feeling that legal sanction may have to be provided to enable the Centre to intervene in the affairs of a Province in certain exceptional cases to which we have referred above. To us the provisions of the Government of India Act, 1935, are not sacrosanct, and we have no hesitation in saying that, while keeping in view the broad principle that) provincial autonomy should, as far as possible, be respected, no limitation set by the present constitution should debar the country from proceeding successfully with the health programme under consideration.

It is not our intention to review the existing provisions of the Government of India Act, 1935,which regulate the relationship

between the Government of India and Provincial Governments or to suggest suitable alterations to these provisions in order to meet the requirements we have indicated. This task we must leave to the authorities concerned with such matters.

While we realize that changes in the existing law may be necessary to give effect to some of our recommendations, we must reaffirm our view that the measures for consultation and co-operation which we are suggesting will perhaps provide the safest foundation on which lasting progress can be attained. We are strengthened in this view by an examination of the relationship between the Federal and State Governments in the United States of America in respect of health administration.

8. This relationship has been described succinctly by Smillie in his book, "Public Health Administration in the United States" (1943). "The State", he says, *"is the sovereign power* and not the Federal Government. Each State is autonomous in all the matters relating to public health within its own borders. These powers are delegated to the State by the constitution. The Federal Government possesses only those functions and powers that are specifically designated to it by the several States."

The need for the active co-operation of the Federal Government with State Governments in the development of a national health policy was emphasized by the Committee on Economic Security which made its report to President Roosevelt in 1935. The Committee stated:—

> "It has long been recognized that the Federal, State and local Governments all have responsibilities for the protection of all the population against disease. The Federal Government has recognized its responsibility in this respect in the public health activities of several of its departments. There also are well established precedents for Federal aid for State health administration and for local public health facilities, and for the loan of technical personnel to States and localities. What we recommend involves no departure from previous practices but, an extension of policies that have long been followed and are of proven worth. What is contemplated is a Nation-wide public health programme, financially and technically aided by the Federal Government, but supported and administered by the State and local health departments."

The Committee recommended that funds should be made available for:—

(1) an increase of public health activity by the Federal Government itself and

(2) provision of grants-in-aid to States for: —

(a) the development of State health department activities and

(b) the development of local health services in communities that are unable to finance adequate health protection programmes.

These recommendations were embodied by the Congress in the Social security Act of August 14, 1935. The Act has titles which, are shown below:—

I. Grants to States for old-age assistance.

II. Federal old-age benefits.
III. Grants to States for employment compensation administration.
IV. Grants to States for aid to dependent children.
V. Grants to States for maternal and child welfare.
VI. Public health work.
VII. Social Security Board.
VIII. Taxes with respect to employment.
IX. Tax on employers of eight or more persons.
X. Grants to States for aid to the blind.
XI. General Provisions.

Under the Act, public health work was assigned to the U. S. Public Health Service.

The allotment to each State was determined on the basis of (1) population, (2) special health problems and (3) financial need and was contingent upon the establishment by it of a properly organized State health department on a full time basis. The help rendered is partly through the grant of subsidies and partly through the assignment of trained personnel from the Federal Public Health Service to work in individual States for limited periods of time.

Decentralization of health functions appears to be at least as complete in the U. S. A. as it is in British India. Nevertheless, a large measure of co-operation seems to have been established in the field of health administration in that country.

9. We may now proceed to discuss the Health Organization we propose for India, which will consist of the following: —

(1) a Ministry of Health at the Centre;

(2) Ministries of Health in the Provinces and

(3) local area health administrations.

For reasons, which we have already discussed in our proposals for the long-term programme and to which we have again referred briefly earlier in the present chapter, we recommend the establishment of two advisory bodies, the Health Board and the Health Council, at each of the three levels of administration indicated above. We shall now consider the functions of each type of health authority and of its associated advisory bodies.

The Central Ministry of Health

10. As we have already pointed out earlier in this chapter, the Minister will have at his command the services of a highly qualified technical officer—the Director General of Health Services. The functions of the Central Ministry will, among others, include the following.—

(i) To study and plan schemes of health services, preventive and curative, for the whole of India; to revise or modify such schemes from time to time and to assist and coordinate activities for the extension and improvement of health services in the provinces.

(ii) To assist in the provision of proper facilities for the education of medical and auxiliary personnel throughout India.

(iii) To provide for medical research and the training of research personnel for central purposes and to assist and encourage medical research and the training of research personnel in the provinces.

(iv) To co-ordinate the activities of all workers in the field of public health and of all existing medical institutions and organisations conducted by every type of agency, both official and non-official, statutory and private; to augment such provisions where necessary so as to make them available to all, rich and poor alike.

(v) To meet the obligations assumed by the Central Government under the provisions of international treaties.

(vi)To collect, tabulate and publish the vital statistics of the various component parts; to undertake a periodical census at such intervals as may be laid down by law; to direct the organization and the carrying out of statistical studies in any part of the country designed to throw light on any aspect of the health problem.

(vii) To carry out all such health measures as are required for (1) the control of inter provincial spread of communicable diseases, (2) the sanitary control of inter provincial traffic and (3) control of food and drugs in inter provincial commerce.

(viii) To establish and enforce standards of control for the manufacture and sale of drugs and biological products used in the treatment of diseases.

(ix) To assist the provinces, and through them local health administrations, in their health programmes; the assistance given by the Centre to the Provinces may be either technical or financial or both, as circumstances may require, and may be subject to such terms and conditions as the centre may lay down.

(x) To take such legislative or executive action as may be provided by the Constitution as being action in respect of which all-India measures are necessary to safeguard the health of the country.

In the exercise of these functions it would have no power to impose its views on the provinces except in the cases referred to in (v), (VI), (vii), (viii) and (x).

The Statutory Central Board of Health

11. We recommend the creation of a Statutory Central Board of Health which will consist of the Minister of Health at the Centre and the Ministers of Health in the Provinces. The Central Minister will be the Chairman of the Board. The Director-General of Health Services and the Provincial Directors should normally be in attendance at the meetings of the Board, but they should have no power to vote when decisions are taken.

12. The Board is intended to provide a forum for the discussion of health policy and for facilitating its execution with the fullest possible measure of co-operation between the Centre and the Provinces.

13. We have already expressed our view that the programme of health development, which we have advocated, cannot be carried out effectively in the provinces unless the Central Government is willing to provide financial aid to Provincial Governments. One of the important functions of the Board should be that of making recommendations to the Central Government regarding the distribution of grants-in-aid. While the Board will no doubt develop its own procedure for making such recommendations and for reviewing periodically the work accomplished in different areas through the utilization of these grants, we believe that the following suggestions may prove to be of value for regulating procedure:—

(i) Individual provinces should develop their own resources as much as possible. The Centre should not be considered as the main source of help for all developmental programmes. Responsibility for the health of their inhabitants is primarily on Provincial Governments. While it is true that the taxable capacity and natural resources of these Governments do vary and that the poorer provinces should therefore have a greater claim on Central help, we believe that the Government of India and other Provincial Governments have the right to maintain that these poorer provinces should demonstrate that they have done their best to exploit to the full their financial resources.

(ii) Where a matter of all-India importance is involved, such as the production of quinine, and where certain provinces are in the privileged position of being the sole producers, the public interest requires that production and distribution should not be on the basis of an unreasonable profit for the Provincial Governments concerned. Special conditions of climate and soil are of importance in the cultivation of cinchona and pyre thrum and possibly of other plants yielding various substances of medicinal value. As such conditions will probably restrict the areas suitable for cultivation to the territories under the jurisdiction of certain Governments, it is only through the development of an agreed policy that increased production and equitable distribution of such drugs can be promoted. The Board constitutes the machinery through which the formulation of a policy based on common agreement can be attempted, while Central grants to stimulate the production and distribution of these drugs can help to neutralize the profit making tendency which may be expected to emerge if development were left as the sole responsibility of the Provincial Governments concerned.

(iii) The grants should be, as far as practicable, for specific purposes so that it would be possible to estimate from time to time whether those purposes were being fulfilled. The grants should be accompanied by suitable conditions regulating, among other things, the employment by Provincial Governments, on the schemes concerned, of persons with approved technical qualifications, visits by the technical and administrative officers of the central

Government in connection with such schemes and submission by Provincial Governments of such periodical reports and returns as may be prescribed. Subject to these conditions, it is desirable that the grants should be made as block grants for a specific period of years in order to provide assurance to Provincial Governments in regard to continuity of financial assistance during that period.

14. We have suggested that the Board should review, from time to time, the work accomplished in the Provinces through the utilization of these grants. Such reviews will naturally form part of the procedure enabling the Board to make recommendations regarding the continuance or termination of specific schemes.

15. We have referred to certain special circumstances which may necessitate active intervention by the Centre in provincial administration in order to protect the health of the country as a whole. It is recognized that, on such occasions, the decisions must lie with the Central Government. Nevertheless we recommend that, except on occasions requiring action which brooks no delay, the Central Government should intervene in the provincial administration only after consulting the Board. Whenever emergent action is taken, the matter should be reported to the Board without delay.

Central Health Council of Experts

16. The creation of standing councils of experts at the three levels of Central, Provincial and local area administrations has already been suggested. In chapter III we quoted from the White Paper recently issued by the Ministry of Health in England embodying proposals for a national health service, in order to show that this Ministry considered it essential to provide special devices for enabling the Minister and local authorities to secure the advice and guidance of technical experts. The White Paper has therefore made provision for the establishment of Health Services Councils at the Centre and in local areas.

17. The function of the Central Council proposed in the White Paper will be to express the expert view on any technical aspect of the organization and functioning of the health service. "It will be entitled to advise, not only on matters referred to it by the Minister, but on any matters within its province on which it feels it right to express its expert opinion." In addition to regular and general consultations, it is proposed that the Minister should refer to the Central Council in draft form any general regulations which he proposes to make in the new service on subjects within its expert field. This Council will consist of about 30 to 40 members representing medical organisations (specialist and general) voluntary and municipal hospitals, medical teaching and professions such as dentistry pharmacy, nursing and midwifery.

18. We recommend that a technical committee of the kind envisaged in England should also be established in India in order to give expert advice to the Central Government on all matters relating to the organization and control of the future health services This body, which may be designated the Central Health Council, should be purely advisory and its purpose will be to give advice to the Minister on technical matters.

19. It is suggested that the Central Health Council should, in the first instance, be appointed by the Minister. It should elect its own Chairman and define its methods of procedure and, as has been suggested in the White Paper in England, the Minister should provide it with the necessary funds and staff for the discharge of its functions. It should be a self-perpetuating body, a certain number of its members retiring each year. Replacement should be made from distinguished members of the professions to which the retiring individuals belong, through election by the existing members of the council. It is recognized that this procedure may be objected to on the ground that the inclusion of persons representing the views of the respective professions may be prevented by those who are already on the Council. On the other hand, the normal democratic procedure of voting on a wide franchise may not, in this case prove to be a satisfactory method of ensuring the selection of individuals of adequate technical competence and of the highest standing in each profession. If the Council nominated by the Minister on the first occasion consists of suitable persons, there is reason to believe that the procedure of self-perpetuation, outlined above, might afford a better chance of the selection of successors to those who go out at intervals, being based on the dual requirements of ability and standing in the profession.

The Provincial Ministry of Health

20. The Provincial Minister will, as in the case of the Minister at the Centre, have the services of an expert technical officer who, we have suggested, should be called the Director of Health Services. The functions of the Provincial Ministry will include, among others, the following: —

(i) Study of provincial health problems and the planning of schemes for their solution; provision for the early diagnosis of disease and for adequate curative and preventive treatment for it either through insurance or non-insurance schemes, such schemes being implemented directly from provincial funds or through assistance to local authorities and voluntary organisations; provision of machinery for the co-ordination of, and technical supervision over, health measures throughout the province.

(ii) Enactment of regulations dealing with sanitation, disease control and public health which have the force of law throughout the province.

(iii) Establishment and enforcement of minimum standards of performance of work of health departments, particularly in communities receiving state aid for public health.

(iv) Maintenance of a central laboratory, and where necessary branch laboratories, for the standard functions of diagnostic, sanitary and chemical examinations; production or procurement of therapeutic and prophylactic preparations, and their free distribution for public health purposes; establishment of standards for the conduct of diagnostic laboratories throughout the province and laboratory research into the causes and means of control of preventable diseases.

(v) Collection, tabulation, and. publication of vital statistics for each important political or health administrative unit of the Provence and for the province as a whole.

(vi) Collection and distribution of information concerning pre-veritable diseases throughout the province.

(vii) Maintenance of the safety and quality of water supplies and controlling the character of the disposal of human waste for all communities of the province.

(viii) Establishment and enforcement of minimum standards for food supplies.

(ix) Provision for services to aid industry in the study and control of health hazards due to occupation.

(x) Prescription of qualifications for different types of public health personnel.

The Provincial Health Board

21. The functions of the Provincial Health Board will be similar to those of the Central Health Board namely, the formulation of health policy for the province as a whole and the making of recommendations in respect of the grants to be sanctioned by the Provincial Government for health schemes in local areas. Until the health organization proposed by us covers the whole area of individual provinces there will be, in each district, certain areas served by the new health services while the remaining parts which will gradually diminish, will be served by the existing health organisations. For the areas under our scheme we are proposing, as will be seen later in this chapter, a special local health authority which should be designated the District Health Board and should take over the health functions of all existing local bodies in such areas. In the circumstances, during the short-term, representation on the Provincial Health Board will have to be found for the Provincial Government, for District Health Boards and for local bodies, rural and municipal, operating in the areas outside our scheme. When the long-term programme is completed, the jurisdiction of the District Health Boards will cover the whole province, and local bodies constituted under the self-government Acts, will have ceased to function as health authorities. Representation for local bodies on the Provincial Health Board will, therefore, become unnecessary.

The Provincial Health Council

22. The composition and functions of this council will be similar to those of the Central Health Council.

One of us (Mr. P. N. Sapru) holds somewhat different views regarding the constitutional aspects of the proposals set out above and certain other matters. His Minute is attached to this chapter.

HEALTH SERVICES CENTRAL AND PROVINCIAL

23. We may now proceed to examine the functions of the health services that will be associated with the Ministries of Health of the Centre and in the Provinces. Their main functions are given in diagrammatic form in Appendices A and B to Chapter III of this volume of the report. In addition to the administrative officers in each case there are provided six Deputies at the Centre and five in the Provinces each being in charge of a special group of subjects. At the Centre we have included town and village planning as part of the functions of the Ministry of Health while, in the Provinces, where

the main developments in this connection will have to take place, we have suggested the creation of a separate Ministry for dealing with the subject *(vide* Chapter XII). The various functions allotted to the Deputies have been distributed among 14 Assistant Directors General or Assistant Directors as the case may be at the Centre and in the Provinces. The distribution of these Assistants in relation to subjects is the same in *both* cases and is shown below:

	No. of Assistant Directors or Directors General
General Administration	1
Medical Belief	2
Public Health	6
Professional Education and Research	2
Public Health Engineering	3

24. We realize that certain provinces with larger territories and populations will require a larger directing staff at their headquarters than others. In the circumstances the above figures are offered as tentative suggestions, which individual provinces will no doubt modify to suit their own requirements. It is recognized that officers with adequate experience and training may not be available at once in sufficient numbers to fill these posts in all the provinces. There will, no doubt, be some delay in setting up these organisations in their completed form. Such delay should be minimized as far as possible because it is on the efficiency and proper functioning of these 'officers, who will be responsible for organizing the health scheme which we have recommended that the success of the programme will largely depend.

25. We have already referred to the importance of securing for the poets of the Director General of Health Services at the Centre and of the Directors of Health Services in the Provinces, persons best fitted to fill these very responsible positions. The qualifications that are necessary are professional and administrative ability of a high order as well as a community outlook which will enable them to view "the problems of health not only in relation to their technical implications but also in relation to their bearing on community life. From the professional point of view they should combine experience of the remedial and preventive branches of medical practice. This requirement should easily be met after our health programme has been in operation for fifteen or twenty years, because our proposals require that the same doctor should perform both these functions. The two departments have, however, been working separately in India in the past and it may not, therefore, be easy to secure in the immediate future suitable officers with administrative experience in both branches of health work. We consider that special emphasis should be laid on the possession of community outlook in the selection of incumbents for these posts. As a general rule, it is work in the preventive field that brings a medical man more in touch with the social aspects of medicine. Moreover, he is compelled, from his day to day experience, to look on disease as a community phenomenon, while his colleague on the curative side may often develop a more restricted point of view, because his field of experience may be limited to the care of individual patients. We there fore, feel that there is some justification for laying emphasis on experience in preventive health work as an important qualification for selection. At the same time we are not oblivious to the fact

that the social outlook, which we have stressed, is not purely the result of service in any particular sphere of professional activity. The development of the community outlook is largely influenced by such factors as a high level of general culture, a background of moral and ethical ideas and a close association with social service activities. In these circumstances, we can do no more than suggest that all the considerations set out above should be taken into account when making appointments to these posts. The same consideration should guide the selection of officers for administrative posts in the district.

Recruitment and Control of the Central and Provincial Health Services

26. We have given considerable attention to the questions relating to the recruitment and control of the future Central and Provincial health services. We recommend that the following principles-should guide the authorities concerned with the recruitment and control of these services in India: —

(1) there should be separate and independent Central and Provincial health services appointed and controlled by the Central and Provincial Governments respectively. In our view acceptance of the principle of provincial autonomy militates against the creation of a service the ultimate control over certain members of which may he outside the jurisdiction of the Provincial Government. Hence it is that we recommend that the Central and Provincial Health Services should be independent and separate;

(2) the venue of recruitment of all these services, Central and Provincial, should be India;

(3) the posts under both the Central and Provincial Governments-can be divided broadly into two groups, namely, (a) those which belong to the general health services and the large majority of the posts in teaching and research institutions in respect of which' recruitment will be restricted to persons living in India and (b) a small number of posts in connection with teaching and research institutions, recruitment for which may perhaps be necessary from outside the country.

Recruitment to these two groups of posts should be regulated asunder—

(i) As regards the first of these, recruitment should be through the Public Service Commission of the Central or Provincial Government as the case may be. There should be an examination which will include a written test and a *viva voce.*

We recognize that, for various reasons, Governments in India will probably continue to recruit their health and other services, at least partly, on the basis of communal representation. We have dealt with this subject in connection with the admission of students to training institutions and have recommended that a certain percentage of the seats should be reserved for admission solely on merit. As regards recruitment to the health services we attach the greatest importance to certain posts, such as those in teaching and research institutions, being filled only on merit. The former are concerned with the production of health personnel and the latter with the advancement of knowledge for the promotion of health and the conquest of disease. In our view considerations of efficiency

demand that merit should be the sole criterion for appointments to these posts. We also consider that recruitment to a certain proportion of posts even in the general health services should be based on merit and we recommend that the proportion so recruited should be 33 1/3 per cent. In filling up the remaining 66 2/3 per cent of the posts consideration may be given to the need for communal representation. Every community should have its share of this 66 2/3 per cent in accordance with the proportions laid down by the governments concerned. We suggest that, of the candidates available from individual communities, the best should be chosen. After admission into the health services promotion to higher posts should be regulated solely by merit. Communal considerations should not have any place here. If they do, efficiency is bound to suffer and the morale of the health services will be lowered.

(ii) For teaching and research posts in which recruitment in the world market may have to be resorted to, we recommend that the decision should be preceded by a search through the country to secure suitable persons of the required caliber. Experts obtained from abroad should be entertained strictly on short term contracts, extending from three to five years in the first instance.

In such cases, every effort should be made to train a suitable Indian within the period of the contract.

As regards teaching and research posts under Governments for which candidates will be recruited from the world market their 'respective Public Service Commission's should be entrusted with the task. It may be found necessary to provide these Commissions with the assistance of *ad hoc* Committees in the countries from which recruitment is contemplated.

(4) We have recommended the creation of independent health services by the Central and Provincial Governments. The successful development of our health programme postulates the closest possible co-operation between the Centre and the Provinces not only through the Central Board of Health but also through the contacts that the administrative and technical officers of these governments will establish with one other. It is, therefore, advisable that the officers of the two types of health services should have adequate opportunities of learning one another's health problems. We recommend that a programme of exchange of officer's between the Centre and the Provinces may be planned after mutual consultation. The period of deputation may be about three to five years. Each Government should send to the other a panel of names from which would be selected the required number of officers for mutual exchange. The desirability of exchange at two or three levels in the Central and Provincial Services is stressed. Such exchanges will ensure that officers of varying service and range of experience will be benefited by the proposed scheme.

(5) We assume that the larger financial resources of the Central Government will enable it to maintain a cadre of health officers with higher technical qualifications than most Provincial Governments can afford. Any scheme of exchange is not likely to prove workable if the level of efficiency of the officers from individual provinces is far below that of the officers of the Central Health Service. We there-fore suggest that at least a proportion of the peats in the Provincial Cadres should be maintained at a level in respect of salary and

status corresponding to those of the Central Service. This proportion may be filled partly by promotion and partly by direct recruitment.

We consider it essential that, as the vast majority of the members of the Provincial Service will have to enter it through posts on the lowest scale of pay and as merit should be the criterion for promotion, the highest posts in the service should be open to all. By periodical assessments of quality, either through departmental examinations or other tests, it should be possible to select at successive stages of service, capable and keen workers who should be given all opportunities to improve their technical efficiency and to rise in service through efficient work. This being our view our proposal for a percentage of direct recruitment to the superior grade has not been made with the idea of limiting opportunities of advancement for the junior workers in the service. There are bound to be, in an organization of the type we envisage certain posts for which persona with qualifications definitely above the usual standard or of a special character may have to be recruited. We have in mind certain technical posts in general health administration, which require special qualifications, and some of the higher teaching and research posts. Persons recruited to such posts are not often likely to be of the age at which people generally enter the health services. Their higher age and wider experience would naturally merit a better starting pay than that provided for those who enter the service in the usual way.

(6) The Central and Provincial health services should be maintained as purely civil organisations. The question of provision of medical services for the Defense Forces is not being dealt with by us as we consider that this subject does not fall within our terms of reference.

(7) All members of the health services, Central and Provincial, should have opportunities of gaining experience of both urban and rural health work.

(8) We recommend that there should be no reservation of posts., either under the Central or under Provincial Governments, for the Civil branch of the Indian Medical Service through rules made by the Secretary of State for India under Section 246 of the Government of India Act, 1935, or under the provisions of any other enactment for certain special categories of that Service.

It is understood that one of the reasons for such reservation is the desire to provide medical aid by British personnel to the British members of the civil services in this country and to their families. Presumably such a demand could not have been made on the basis of racial prejudice. If the claim is based on the idea that the British doctors in India are professionally superior to their Indian colleagues we cannot accept this suggestion. In fact, we maintain that, in all the larger urban centers, many Indian members of the independent medical profession and of the State medical service provide professional ability of the highest type. Even in rural areas it should be possible to arrange for efficient service for British Officers and their families from medical men, British or Indian, from the nearest urban centre. Under the circumstances, the continuance of a reservation of posts' this ground seems unjustifiable.

There are other, reasons also, for discontinuing such reservations with delay. Reservation of post in the provinces for the

members of the Central Service is against the principle of provincial autonomy in as much as it compels Provincial Governments to accept officers whose ultimate control is vested in the Centre and not in the Provinces. We have envisaged a Provincial Ministry of Health responsible to the people of the Province and practically independent of the Centre in the shaping of internal health policy. In our view, therefore, the granting of power to the Centre to thrust its officers on a Provincial Government cannot be justified. We believe that the continuance of this practice will jeopardize the success of our scheme by creating unnecessary friction between the Centre and the Provinces. It should, therefore, be discontinued as-early as possible.

We also feel that the principle that merit should be the criterion: of selection, makes it undesirable that the practice of reserving posts, either at the Centre or in the Provinces, for the members of a particular service should continue. We envisage the pooling of all available talent in the furtherance of our scheme and its utilization to the best advantage and this, we feel, cannot be ensured unless the practice of reservation of posts ceases to operate.

27. Two of our colleagues (Drs. Vishwanath and Butt) do not agree with our views regarding a Central Ministry of Health and Central Health Services and also the method of recruitment to Provincial Health Services. We give below their views in their own words: —

"The highest level of functioning of the health administration must reside where the highest level of autonomy obtains. In India the Central Government is not constituted oh a basis of Democratic responsibility. At present the Provinces alone possess that level of responsibility which can provide popular sanction for the contemplated schemes of reconstruction and for an administration sensitive to scientific as well as democratic requirements. We are therefore opposed to the creation of a Central Ministry of Health and its administrative apparatus of Central Services. For the disposal of matters of inter provincial and international interest we propose the creation of a Central Board of Health, composed of the Ministers of Health of different Provinces and comparable authorities from the administrative units which are now under the Government of India.

"We also envisage that the Board will take an important part in the promotion of research. In addition to the Secretariat of the Central Board we consider it essential to organize units, under the aegis of the Board, which will function in the field of research in subjects of inter provincial and international interest and reciprocity.

"The proposed organization is represented diagrammatically below:—

CENTRAL BOARD OF HEALTH

(Composed of Provincial Ministers)

Research units dealing with the inter-Provincial and international aspects of the following .	Secretariat with the function of implementing the decisions of Board, particularly in the field of survey and planning.

(a)medical relief and public health ;
(b)the engineering and industrial aspects of (a) above
(c)social aspects of (a) ;
(d)biological products, including standardization ;
(e)bio statistical studies and
(f) such other functions as the Board may decide to undertake.

"We deprecate the idea of direct recruitment to a superior class in any health service and stress the need for every one entering at the bottom and working his way up through merit. Further, in order to provide sufficient incentive to do good work, even the highest post should be open to the man on the lowest rungs of the ladder. By two tests at the end of the first five and ten years of service respectively, it should be possible to select those who will be promising material. These men will constitute the field of selection for the higher posts in the spheres of administration, teaching and research.

"In the disposal of the highest administrative posts in the provinces we consider it advisable for the appointing authorities to act in consultation with the Central Board of Health. At this level it may be advantageous to Provinces, on both administrative and political grounds, to be free to exchange between themselves this category of personnel. This exchange must, however, be in all cases voluntary and the provision should in no way operate to the detriment of provincial autonomy."

We are in full agreement with the emphasis laid by our colleagues on the principle that merit should be the sole criterion for promotion and that those "on the lowest rungs of the ladder" should be able, through merit, to climb to the highest posts in the different branches of the health service. If our proposals are carefully examined it will be seen that they make definite provision for the application of this principle. As regards direct recruitment to a "superior class" in a provincial health service, we have given full reasons for our recommendation that a proportion of posts in such a class should be filled by this method. Further, we have made it clear that a proportion of these superior posts should be filled by promotion which will be regulated by merit.

29. We further consider their proposal that there should be no Central Ministry of Health and no Central Health Service unsound and impracticable. The main reason advanced by them for this proposal is that the Central Government is not, at present, responsible to the people. We have also recognized this and have, therefore, stressed the paramount importance of establishing the Ministries of Health both in the Provinces and at the Centre on the basis of responsibility to the people, so that the shaping of health policy and its implementation will throughout be influenced by public opinion. We therefore, feel that there is no fundamental difference between our views and those of our colleagues on this particular matter.

30. We consider their proposal impracticable for more reasons than one A Board consisting of the Provincial Ministers of Health and its Secretariat cannot function as the administrative machinery responsible for the internal and international health functions which the Central Government will have to perform. We envisage, so far as the country's internal administration is concerned, certain exceptional circumstances requiring the Centre to intervene in the

administration of individual Provinces in the interests of the country as a whole. Action in such cases may often have to be taken expeditiously and a committee which will have to be assembled from all parts of the country is not calculated to meet this requirement. Further, it is doubtful whether effective action will be taken by a collective body like the Central Board, especially if the offending party or parties happen to be the more important among the Provincial Governments. As regards India's international health obligations the Governments of other countries can deal more satisfactorily with a Central Government, which will reflect India's views as a whole than with a Board of Provincial Ministers.

31. Our scheme envisages a Centre acting with imagination and sympathy in its dealings with Provincial Governments in full consultation with them and promoting health development in their territories through grants-in-aid from Central funds and the loan of trained personnel to Provinces, whenever such help is needed. The proposal of our colleagues would, it seems to us, remove the possibility of such help to the Provinces.

LOCAL AREA HEALTH ADMINISTRATION

Local Authorities and Their Present Health Functions

32. When, in the eighties of the last century, municipal and rural health authorities were established in British India it was decided that various local administrative functions, such as those relating to rural education, dispensaries, sanitation, water supply drainage and veterinary service should be transferred to the newly constituted authorities. Till the end of the second decade of the present century, these local bodies were under varying degrees of control and guidance by the district officials of Provincial Governments. The Montague-Chelmsford Report (1918) on Indian Constitutional Reforms emphasized the need for a relaxation of such control and they recommended that "There should be, as far as possible, complete popular control in local bodies and the largest possible independence for them of outside control." In accordance with this recommendation, the direct supervision exercised by district officials was withdrawn to a large extent and local bodies were constituted as organisations composed of elected members with a large measure of independence. The results of this transfer of power were not satisfactory because lack of experience and continual pressure from the electorate and from the members of the local bodies themselves made it impossible for the elected Chairman, in whom administrative powers were concentrated, to carry out efficiently the functions entrusted to them. These results might have been in part due to the fact that health consciousness had not been developed to any great extent. Another contributory factor may have been the fact that the supervision exercised by Provincial Ministers of Local Self-government over these local bodies was far from satisfactory. In their review of local self-government the Indian Statutory Commission (1930) stated: —

> "The result of the legislative and administrative action taken in accordance with the scheme of the Reforms was, in effect, to deprive the new ministers of local self-government of powers which were essential if they were to perform their tasks successfully. We have heard the criticism that the only effective powers possessed by

provincial governments, namely those of suspension and dissolution, have left the ministers powerless in the face of misconduct calling for less drastic treatment, and we think that the criticism is well founded."

33. The Government of India Act, 1935, which came into operation in 1937, made the Provincial Government directly responsible to the Provincial Legislature. Under such conditions in more than one province it was seen that the Ministers were anxious to ensure a rising of the standard of administration of local bodies. In the United Provinces and in Sind special Committees were set up by the Provincial Governments concerned to report on the administration of local authorities. We do not know what action was taken in these provinces on the recommendations of their respective Committees.

34. Another instance may also be given. In Madras the Provincial Government has introduced many administrative and legal measures in order to improve local-body administration. Details regarding the action taken by the Government of Madras are given in Appendix 26. Such action has been based partly on the provisions of the Local Self-government Acts governing the local authorities for municipal and non-municipal areas and partly on a consolidated Public Health Act which was passed by the Provincial Legislature early in 1939, when a popularly elected government was in power. Briefly stated, the result was that the relationship of the Provincial Director of Public Health and of Health Officers to local authorities was changed. Previously, these officers were only advisers to local bodies and statutorily they had no executive functions. Rural and urban Health Officers could not, even during an emergency like an outbreak of cholera, employ additional staff or incur expenditure in other directions without the sanction of the Chairman of the local body concerned. All the executive powers were vested in the Chairman, and Health Officers could exercise only such powers as were delegated to them by the Chairman. The Public Health Act has transferred all the executive functions under the various sections relating to health in the Local Self-government Acts and other Acts to the Health Officer. He has been given control over the entire health staff and, during an emergency; he has the power to incur expenditure and to employ additional staff. If his action in these matters is challenged by the local authority, a reference must be made to the Director of Public Health whose decision is final. The latter has also extensive powers under the Public Health Act and these include the power to require local bodies to carry out certain essential measures and power to concentrate Government and local body public health staff in specific areas to meet the demands of special occasions such as festivals and outbreaks of epidemics. Other measures taken in Madras Presidency to improve the administration of local bodies include the provincialisation of the services of health officers, engineers and executive officers employed by these authorities, so as to attract and keep suitable men for these services and thus improve local administration.

OUR PROPOSALS

35. In chapters III & IV we have set out our recommendations for the district health services for the long and short-term programmes. Under the latter the new health services will cover only

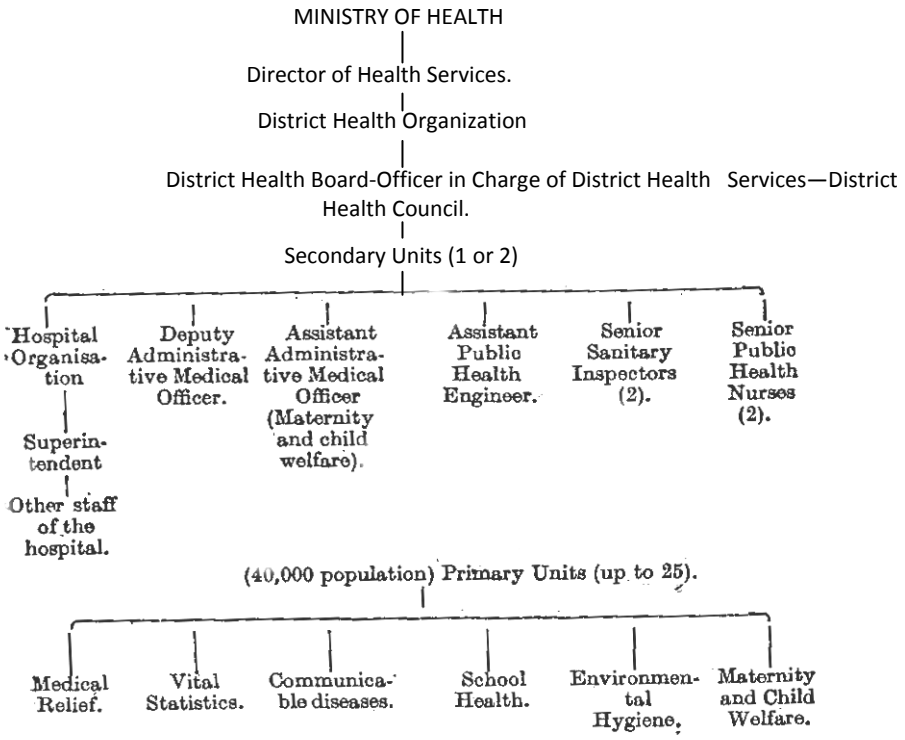
*Report of the Local Self-government Committee, United Provinces (1940).

Report of the Local self-government Committee, Sind (1943).

a part of' individual districts, the existing services continuing to function in the remaining areas. In view of the general low level of efficiency of local body health administration the first essential is, we consider, an effective improvement of such administration -throughout the district.

The Area under Our Scheme

36. The following diagram shows the short-term district health organization proposed by us:—



37. Our scheme envisages a comprehensive health service and the results achieved by it will depend on the fulfillment of the following conditions: —

(a) Recruitment of the staff and their conditions of service should be on similar lines throughout the province so as to facilitate the enforcement of fairly uniform standards of performance over the whole area and

(b) There should be continuous and effective supervision by the higher technical staff over the work of the health personnel employed even in remote villages.

38. We consider that these conditions can be secured only through a health service maintained by a single health authority for the whole area under the scheme and not through a number of separate services maintained by different local bodies, municipal and rural, which are now functioning in that area. This raises the question of depriving self-governing units of the health functions which they have enjoyed for sometime past. The question for decision is whether the provision of adequate health services for the people or

the retention of the existing form of local self-government in the area concerned should be our first consideration. We have no hesitation in coming to the conclusion that the provision of health protection to the people should take precedence over the continuance of any specific form of local self-government. We are not, at the same time, oblivious of the fact that the success achieved by any health organization will depend largely on the degree of support and co-operation that can be secured from the people for whom the health measures are intended. Provision for enabling local public opinion, to influence health policy therefore seems to us essential. If this principle can be incorporated in the proposals we put forward for local health administration, we feel that the purpose in view will have been served and that any change from existing forms of local self-government, which may become necessary in order to improve the quality and extent of health service that can be made available to the people, is of secondary importance.

The District Health Board

39. We have already suggested that, so far as health is concerned, in the place of the existing multiplicity of local health authorities with their separate staffs, there should be a single health authority over the whole area operating through a unified executive staff. Such an authority would, we believe, be able to establish a more efficient service by avoiding the duplication of staff and institutions inevitable under existing conditions and through the larger financial resources that would become available to it in view of the wider limits of its jurisdiction. We recommend that this health authority may be designated the District Health Board as its jurisdiction will in due course extend over the district as a whole except for certain large municipalities to which reference will be made presently. To this Board should be transferred all the health functions now exercised by the different local bodies included in the area under our scheme. The local bodies will then be left with such functions as education, public works and communications.

40. The composition of the District Health Board may now be considered. Its main function, as in the case of the Central and Provincial Health Boards, is to associate public opinion with the formulation of health policy and with its implementation. Representation of the people on the Board can be secured (1) by direct election, (2) by election, from their own ranks, by the local bodies in the area covered by our scheme and (3) by a combination of both these methods. We are ourselves in favor of the last of these three courses. We also recommend that the District Collector or the Deputy Commissioner as the case may be, should be a member of the Board. His administrative experience and contacts with other departments of Government, the activities of which have a bearing on health, will be of value to the Board. We go even further. We look to him as the official administrative head of the district to secure for the health services, which we contemplate, the active support of the officers of the various departments in the district whose co-operation is essential if advance on a broad front is to be ensured.

41. The functions of the District Health Board will include the discussion and formulation of health policy and the distribution of funds for the different branches of health administration within the area under its charge. We recommend that each local authority

should be required, by a statutory provision, to contribute a fixed proportion of its revenues to the District Health Board. We commend for the earnest consideration of Provincial Governments the ratios that have been laid down by the Madras Legislature in Section 127 of the Madras Public Health Act, 1939. It provides that every municipality "shall earmark not less than 30 per cent of its income from all sources other than Government grants, for expenditure on the advancement of public health in its local area, including expenditure on medical relief, and every district board or p*anchayat* shall similarly earmark not less than 121/2 per cent of its income from such sources." These proportions of their revenues should be made over to the District Health Board by the rural and municipal local authorities in the area. Obviously the actual amount of the contribution in each case will depend on the proportion of the population under the local body concerned which is brought within our scheme. Such contributions and the grants that may be sanctioned by the Provincial Government will together constitute the funds which will be administered by the Board.

42. While the Board will be subject to such rules as may be framed by the Provincial Government for the conduct of its business, it is recommended that there should be a large measure of autonomy in order to ensure that local opinion in the district may increasingly - influence health policy and secure public support for it. Nevertheless the exercise of this autonomy should not be allowed to result in a material departure from the general health policy laid down by the Provincial. Ministry of Health or in any serious neglect of the Board's functions to the detriment of local health administration. To meet such contingencies, we may make two suggestions, (1) that the Provincial Minister should have the power of ensuring compliance, by the Board, with the general health policy laid down by him, and (2) that certain legal provisions that exist in the Province of Madras •enabling the chief administrative officer of the Public Health Department to recommend specific action by local health authorities in particular directions for the improvement of the public health and to enforce the carrying out of such recommendations, subject to the concurrence of the Provincial Government, should be made applicable to all the areas under our scheme. Reference is, in this connection, invited to Appendix 26.

43. The acceptance of this dual principle of encouraging the growth of local responsibility in health administration and of ensuring, at the same time, the maintenance of a reasonable level of efficiency appears to us to be essential to the success of the comprehensive programme of health development that we have advocated.

Extension of our District Health Board proposal to other functions of local authorities

44. The main functions which local bodies now perform are those relating to (1) health, (2) education and (3) public works and communications. We have already suggested that the health functions of the local bodies, in the area under our scheme, should be transferred to a District Health Board which will be, to a large extent, popularly-elected. While it is not within our province to make recommendations in regard to such subjects as education and communications, we look forward eventually to the establishment of similar boards for the district as a whole, dealing with each

of these subjects. In order to secure coordination of their activities there might well be established a Coordinating Committee on which these organisations will be represented.

Larger Municipalities

45. While we recommend that, eventually, the jurisdiction of the District Health Board should normally extend over the district as a whole, we believe that certain large municipal corporations, which are governed by their own Acts (as apart from the Municipal Acts which are applicable to municipalities in general in the provinces) may be expected to develop and maintain their own health services on the general lines suggested by us *(vide* appendix 27-), and that they need not, therefore, be brought into the district health organization. Examples of such corporations are Calcutta, Bombay, Madras and Karachi. They have sufficiently large populations and sources of taxation to justify their being left to develop separate health-organisations. We believe that municipalities having a population of at least 200,000 may also be brought into this category provided they are in a position to maintain an independent health service of the required technical efficiency. Population is not, however,' the only criterion. The financial resources of the municipality, including' such grants as it normally receives from Government, should be sufficient for the maintenance of the required health services. A decision as to whether a municipality falls into this category can be-made only by the Provincial Government concerned in the light of their knowledge of local conditions.

46. In making this recommendation, we have been influenced by the consideration that we should limit the deprivation of the health functions exercised by municipalities only to such as are in our opinion unlikely to be able to maintain the standard of service we have-recommended.

47. The large municipal corporations which are governed by their own acts will be responsible for the maintenance of the local health, services which should not fall below the level of those recommended by us in our three-million plan. This leaves for consideration other large municipalities with a population of 200,000 and over. The organisations recommended in our scheme for the headquarters of a secondary unit and of the district may sometimes have to be located in such municipalities. In such cases, these organisations will serve the needs not only of the local municipal population but also of the inhabitants of a wider area. In the circumstances we suggest that the Provincial Government should meet the cost of the creation and maintenance of these institutions and recover a suitable-contribution from the funds of the municipality concerned. Should However a municipality of this "class desire to provide itself with its own health services and should it be prepared to find the necessary funds, it should, of course, be allowed to do so. It is essential, however, that the Provincial Government should ensure the due fulfillment of the health functions entrusted to all municipalities.

The Area outside Our Scheme

48. While recognizing the need for raising the existing level of efficiency of health administration we do not propose that the local bodies in such areas should be deprived of their health functions. We, however, consider it essential that in these areas action on the

lines taken in the Province of Madras to improve the health administration of local bodies should be adopted in other provinces *(vide* Appendix 26).

Recruitment and Control of the District Health Service

49. A question of fundamental importance in regard to the recruitment and control of the district health service is whether these should rest with the Provincial Government or with - the District Health Board which we have suggested. We have considered this question very carefully and have come to the conclusion that the balance of advantage is heavily in favor of the provincialisation of this service. Our reasons for coming to this conclusion may be briefly stated: —

(1) Local area health administrations, which possess restricted resources, may often find it difficult to recruit persons of the required caliber because they cannot afford to offer attractive salaries, though it may frequently happen that the poorer areas may be most in need of efficient officers. Provincialisation of the district health service will render it possible to ensure that health personnel of the required quality are made available to areas where their services are most needed.

(2) Service in certain areas may be so unpopular for climatic and other reasons that only a provincialised service can ensure the provision of adequately qualified staff for such areas.

(3) In a provincialised service, the health staff will have more opportunities for widening their experience through contact with varying conditions in many areas than service under a single district health authority could afford.

(4) Under a provincialised service, a member of the health staff, who cannot work harmoniously with a particular District Health Board, can be given a chance of proving his capacity to render satisfactory service by a transfer to another district.

(5) On special occasions, such as festivals or outbreaks of disease the Director of Health Services will, with a provincialised service at his disposal, be in a position to concentrate staff from other parts of the province at places where their services are most urgently needed.

(6) The securing of a fairly uniform standard of performance throughout the province would become easier with a provincialised health service than with independent health staffs under different District Health Boards with their varying standards of recruitment and conditions of service.

(7) In the provinces, which have had provincialised services of health officers for a number of years, the results achieved have been satisfactory from the point of view of the Government as well as of the local authority.

50. In our view, provincialisation need not necessarily mean that the expenditure on the whole organization should be borne by the Provincial Government. We understand that, in the province of Madras, 25 per cent of the average pay of Municipal Health Officers is recovered by that Government from the municipalities concerned although the posts have been provincialised.

51. An important question for examination is, whether the whole of the district health staff should be provincialised or only a part of it From the point of view of efficiency, we recommend that all the

members of the health organization should be provincialised If only a certain number of the more responsible posts are provincialised and the others are left under the Board, the resulting dual control must, we believe, lead to inefficient administration. We, therefore, recommend that the whole district health service should be provincialised in the areas under our scheme.

52. We shall next refer to the position of the Officer in charge of the District Health Service in relation to the District Health Board. Under our proposals he will be a provincial officer whose services are lent to the Board. He should be responsible for carrying out the health policy laid down by the Board and we recommend that he should be its Secretary. In this capacity, it will be possible for him to assist its decisions on health matters by his technical advice. While his position as a member of the Provincial Health Service will give him a measure of independence in expressing his professional views, he cannot carry on the administration successfully without securing the fullest possible cooperation of the Board, which will have to approve his schemes and provide money for them. We believe that this relationship between him and the Board will help to promote cooperation and to build up conventions which will serve to demarcate the respective spheres of activity. We anticipate that such close association between him and the Board will be of value to both.

53. Nevertheless, a state of affairs may arise when the Officer in charge of the District Health Service and the Board cease to work together harmoniously. If such a stage is reached, this Officer cannot usefully continue in the district. We, therefore, recommend that, if the Board passes a resolution by a two-thirds majority (taking into consideration its full strength) asking for his removal, the Provincial Government should transfer him from the district. We have recommended that this resolution demanding the transfer of the Officer should secure the support of two-thirds of the sanctioned strength of the Board in order to ensure that the request would not be lightly made.

54. In Chapter IV we indicated how the new health services covering only a portion of individual districts during the short-term programme should be integrated with the existing organization. We recommend that the curative and preventive departments of health working in a d strict should be unified under one administrative officer to be designated Officer in charge of District Health Services. He will be responsible, during the short-term, for promoting the development of the new scheme as well as for maintaining the existing services in the remaining parts of the district. The administrative officers in charge of secondary units, who will coordinate curative and preventive work in their own areas, will serve as assistants to the Officer in charge of the District Health Services. During the first five-year period, there will be only one secondary unit and, therefore, only one deputy while, during the second five years, there will also be a second deputy in many districts in the different provinces.

District Health Council

55. We have already recommended the creation of a District Health Council consisting of representatives of the different professions *(e.g.,* those of doctors, dentists, pharmacists etc.) from the

registered members of which the health service will be recruited. The functions of the Council will correspond to those of the Provincial and Central Health Councils. We recommend that the Officer-in-charge of the District Health Services should be the Chairman of the Council.

56. An important function of the District Health Council will be to secure the support of the independent medical and ancillary professions to the development of the health programme. We consider this particularly necessary in the earlier stages in the larger urban centers an independent medical profession of standing has been developing during recent years. The informed and constructive criticism of its members should prove of value in the shaping and functioning of the health services. It is suggested that schemes involving technical questions should be submitted to the Health Board with the recommendation of the District Health Council. Its function will be purely advisory, as the ultimate power to define policy and vote funds will be vested in the District Health Board. Even so, the views expressed by the Council are not likely to be turned down by the Board without good and sufficient reasons.

57. The question may be asked as to whether, in our scheme of National Health Service which we anticipate will eventually develop into a full-time salaried service covering the whole population; there is room for the proposed Health Councils at the three levels of - administration, the Centre, the Province and the district. When this stage is reached there will probably be no need for them. But through the many years of development these Councils will, it is anticipated, perform a useful function.

58. One of us (Mr. P. N. Sapru) holds views which are different from those expressed above regarding the provincialisation of the services under local authorities. He has embodied his views in a note which is appended to this chapter. He agrees with us in recognizing that it is essential to ensure security of tenure and fair treatment to the servants of local authorities if efficiency is to be maintained. He, however, does not approve of provincialisation as the method of securing this end. He thinks that provincialisation is likely to lead to friction between local bodies and the public servants who have to work under them. His proposals fall under three heads :—

1. He advocates the creation of a Local Government Board which will function in an advisory capacity to assist the Minister of Local Self-government in his task of controlling the administration of local bodies in the province. The Chairman of the Board will be the Minister of Local Self-government. The members will consist of a certain number of Ministers who deal with such portfolios as education, public health, labor, cooperation etc., elected representatives of municipal and district boards, representatives of medical and engineering professions, of universities, Chambers of Commerce and Trade Unions as well as a certain number of persons nominated by the Minister of Local Self-government to represent interests, which may otherwise go without representation on the Board.
2. All grants given to local bodies by the Provincial Government will be sanctioned after taking into consideration the advice given by this Local Government Board.

The principal administrative officers of Government will be responsible for supervising and inspecting the administration of local bodies Grants can be withheld if they are not utilized in accordance with the policy laid down by the Board.

3. In order to provide for security of tenure he suggests the , creation of a Local Self-government Public Service Commission which should be established by an Act of the Provincial Legislature. The Commission would consist of a Chairman nominated by the Minister of Local Self-government and of two other members also-appointed by him. All appointments including that of sanitary inspectors under local bodies Will be made on the recommendations of special Appointment Committees, which will consist of one of the members of the Local Self-government Public Service Commission and two members selected by the local body for which the appointment in question is being made. The Appointment Committee will send three names in order of preference to the local body which will be required to select its candidate from these three names. The appointing authority will be the local authority. It will also have the right of transferring, censuring and even dismissing its servants but, in every case, a commission of enquiry should precede such disciplinary action. The affected individual can appeal to the Local Self-government Public Service Commission, the decision of which will be final.

59. We have set out, at some length, the recommendations of our colleague because we feel that they deserve the fullest consideration. Local self-government is, undoubtedly, the instrument through which provision is made in all democratic countries for an expression of the people's opinion on matters vitally concerning local welfare. We share with him his desire to see that the people should be given an opportunity to express their views, through their representatives, on the health services that are to be provided for them. We have, therefore, provided that the District Health Board should have-representatives from the local authorities in the area concerned as well as through direct election by the people. We, therefore, feel justified in claiming that the Board, which we have suggested, will be competent to express the people's will and to meet their health needs.

60. We cannot help feeling that the proposals of our colleague are cumbersome and that they are not likely to promote efficient administration. His scheme will perpetuate the existing system of numerous local authorities within a district with their independent health services. Although a certain measure of security of tenure-will be conferred on the servants of these authorities by his proposals, we feel that the separate organisations working within their limited' areas and with no coordinating agency over them cannot produce the results that we anticipate from the integrated health service we have-outlined in the three-million plan. The essence of such a service is-supervision by the highly developed technical staff at the headquarters of the district and of secondary units over the work done in even the remotest villages. An organization of this type cannot be

developed without a single health authority being made responsible for the whole area.

61. Our colleague's main objection to provincialisation seems to be that it will lead to friction between local bodies and the provincial servants working under them. In this connection we have already pointed out that a provincialised service of health officers has been functioning in a number of provinces for many years and the information available to us does not support the view that the system is likely to produce such friction and is therefore, calculated to function unsatisfactorily. In the Province of Madras, where the provincialisation of different services under local bodes has been extended much farther than in other provinces, our investigations give definite proof that provincialisation has worked well and has increased efficiency in health administration.

CERTAIN OTHER MATTERS

1. Should Secretaries to the Ministries of Health be technical or non-technical officers?

62. A considerable majority of us feel that in the Secretariat hierarchy, the contact between the Technical Adviser and the Minister' should not be broken by the intervention of a non technical Secretary to Government and that the Director of Health Services, whether at the Centre or in the Provinces, should him self have the status of, and function as, a Secretary to Government. They consider that the person best qualified to assist and advise the Minister on matters so technical is the Administrative Head of the Services concerned and that his contact with, and responsibility to, the Minister should be unfettered and undiluted. The background and experience of the individual who will hold this post, with his intimate contacts with the urban and rural populations with which his previous experience will have provided him, will give him a knowledge of the habits and customs of the people and with their psychology not less than those of a non-technical Secretary, and appreciably more than those possessed by that Secretary if his service has been mainly in the Secretariat. Then-consider it undesirable and wasteful of time that recommendations on health policy should have to pass through a lay filter, and consider that the wider-administrative aspects stressed by the minority would be adequately supplied were the Director General of Health Services provided with the advice of an experienced civil servant in the capacity of his Deputy for administration. In 'support of this view they cite the increasing tendency of Administrations to appoint as Secretary to the Departments of Engineering and Education the local heads of the Services concerned. Health is even more technical and fundamental than Engineering and Education and these considerations apply with even greater emphasis.

The minority (Sir Joseph Bhore, Pandit L. K. Maitra, Mr. N. M. Joshi and Mr. P. N. Sapru), however, feel equally strongly that a non-technical Secretary to Government, with general administrative experience extending over a wide field, is highly desirable in order-to ensure a just and balanced consideration of questions which concern the life and welfare of the community. Measures connected with the health arid medical service of the people can never, in this country at least, be matters of purely technical concern and any attempts to isolate them in this way must inevitably lead to disaster

To the consideration of such measures must be brought a wide knowledge of the habits and customs of the people, their psychology and the administrative system under which they live, and a non-technical Secretary, with experience of the nature we have indicated, is *prima facie* much better equipped to assess and present, for the final judgment of the Minister, the social, psychological, administrative or political background against which public health and medical problems must, of necessity, be so often viewed.

One of us (Sir Frederick James) is not in agreement with either •of the two views expressed above. He says, "The majority and minority views are mutually exclusive and I am, therefore, not able to subscribe to either of them. The Governments should be free to select the most suitable person, whether technical or non-technical, for the post of Secretary to Government in the Health Department If a technical person is selected I agree that it might be helpful to have as his deputy an experienced civil servant; but the senior officers of the health services should be eligible for appointment to the post of Secretary, and if any of them has the requisite experience and ability he should be appointed in preference to a non-technical officer."

63. We are all however, agreed upon the necessity for ensuring that the Technical Adviser has the right of access to the Minister and that, on a purely technical question, he should be given full opportunity for the exercise of that right before his views are over-ruled. We, therefore, suggest that any adverse criticism of the non-technical Secretary on a proposal put up by the Technical Adviser should be
shown to the latter in order to enable him to reply to such criticism. The Minister will then be in possession of all the relevant arguments to enable him to give his decision.

2. Salaries.

64. We have been greatly exercised over the scales of salaries to be allowed for in calculating the cost of our proposals. The remuneration of the personnel required accounts for the major portion of the overall estimated recurring expenditure, and while too generous & provision on this account may well wreck or at least grievously handicap the implementation of any large-scale health scheme, salaries inadequate to attract the type of persons needed in the numbers required might have equally disastrous consequences.

65. There are weighty considerations against over-loading the salaries budget. India is a poor country. It cannot afford rates of remuneration which are out of all relation to its national income and are higher than those which economic conditions demand. China and Japan, so far as information is available of prewar conditions there, had grasped this basic fact in relation to their own economy. We have been given instances of the salaries paid to certain medical teaching staff in these countries.

66. At the Piping Union Medical College which paid higher salaries than any other medical college in China, the following scales of pay for full time workers were in force.

Professor	approximately Rs. 939 a month.
Associate Professor	approximately Rs. 563 a month.
Assistant Professor	approximately Rs. 488 a month.
Associates	approximately Rs. 375 a month.
Assistants (Demonstrators)	approximately Rs. 169 to Rs. 281. a month.

In Japan the following appear to have been the salaries in vogue: —

Principal of a Medical College	Approximately Rs. 500 a month.
Professor	Approximately Rs. 416 a month.
Associate Professor	Approximately Rs. 200 to 300 a month.

We are not in a position to say, however, whether these figures-represent the total emoluments drawn in each case. The scales of remuneration of comparable categories in this country vary from province to province. Taking Madras as a basis of comparison, a Member of the I.M.S. in a Professorial post would draw his grade-pay plus Rs. 250 as teaching allowance. A Lieut-colonel would thus draw under the old scale Rs. 1,500 to 1,700 plus Rs. 250 and be entitled to private practice. The rates of pay provided for the Provincial Service are for

(1)Professors (clinical subjects)	Rs. 500 to Rs. 900 *plus* Rs. 150 teaching allowance in each case with private practice.
(2) Professors (non-clinical subjects)	Rs. 800 rising to Rs. 1,200.

67. In the U.S.A., where the cost of living is presumably much higher than it is in this country or the United Kingdom, salaries of Professors in the clinical subjects are said to vary between 10,000 and 12,000 dollars a year that is approximately between £2,000 and £2,400. Turning next to other posts, the information given to us in regard to Australia shows that the Chief Medical Officer of the Commonwealth draws a salary of £2,000 (Australian, equivalent to-approximately Rs. 1,800 a month). In the United Kingdom, the Chief Medical Officer to the Ministry of Health in 1944 drew a salary of £2,200 per annum. This has evidently been sufficient to attract men of outstanding attainments, for among the incumbents of this post have been numbered some of world-wide reputation The maxima drawn by Inspectors General of Civil Hospitals, Surgeon Generals, the Public Health Commissioner to the Government of India and the Director General, Indian Medical Service, vary roughly between about £2,475 for the first of these classes and £3,100 for the last named.

68. We are unable, with the material at our disposal, to institute-fair comparisons or to venture on any specific recommendations in this behalf. The question of salaries moreover, is not one which concerns medical and public health personnel alone. It is a much wider and more complex problem. The necessity for establishing some measure of parity between the various Provinces in the matter of the salaries of their Medical and Public Health Services has been strongly impressed upon us by a Provincial Minister of Public Health on grounds which appear to us to have considerable force. But this is not the only consideration to be taken into account. Any very large disparity between the remuneration paid to the various State Services operating in different fields is to be deprecated unless strong reasons exist for such differences, though we realize that the levels of salaries must be such as will not fail to attract candidates with the qualifications required in each case. The competitive attraction provided by non-State employers is another factor which cannot be ignored.

69. We consider this subject to be of such complexity and importance that it calls for comprehensive examination at the hands of an *ad hoc* All-India Committee which should include medical men..

The results of such an examination cannot fail to be of the utmost value and assistance to the provincial authorities. For our present purposes, we have either adopted existing rates or assumed scales of pay which appear to us *prima facie* to be generally not unreasonable, Our figures will no doubt need revision in the light of a fuller investigation such as we have recommended. On one point, however we feel that we are on sure ground and that is in Living down the general principle that (be salaries of employees of the humbler categories and in the lower grades need to be raised while those at the top may well stand some leveling down

70. We ought also to make it clear that in those cases in which, in the interests of the country, it is found absolutely essential to obtain a specialist from abroad, the terms offered will have to be 1 such as are necessary to secure the class of person required. Such cases will, we hope, not be numerous. They will, of "course, fall outside the cadre of the regular medical services of the country and should invariably be regulated by short-term contracts.

71. While, doubtless, the laborer is worthy of his hire, the most fruitful and inspiring effort must always come from those to whom monetary returns count less than opportunities of service and of advancing the cause of human knowledge. We feel that the world is not bankrupt in such workers and that India may still continue to attract some who do not wish to assess their reward solely in terms of money.

72. Our proposals visualize a very large increase in the number of women doctors in the State Medical Service, and the question of their salaries, therefore, assumes considerable importance. The principle of equal pay for the same work appears to us to be the most equitable.

3. Legislation

73. We have already emphasized the need for such amendments of the existing provisions of the Government of India Act, 1935, as will be necessary to enable the Centre to discharge its responsibilities under certain exceptional conditions for safeguarding the health of the country as a whole. In addition to such legislation by the British Parliament, we consider it essential that the existing law relating to health should be revised, modernized and consolidated. Legal provisions relating to health lie scattered through various enactments, and we recommend that the Central and Provincial Legislatures should, within their respective spheres, bring together these provisions and add to or modify them, as may be necessary, in order to provide comprehensive Public Health Acts on which future health administration may be built up.

Minute on Certain Constitutional Aspects of the Proposals regarding the Relationship between the Centre and the Provinces and on some other Matters by the Hon'ble Mr. P. N. Sapru

My colleagues have stated that "the principle of autonomy of provinces in health matters, which has been accepted and followed for some time past, should not be set aside unless it can be shown that a reversal of this policy is fundamental to the development of the national health programme. They add that "in a sub-continent of the size of India it seems almost certain that progress on sound lines cannot be made through an administration based on an autocratic Centre which may not secure the active cooperation of the provinces. They emphasize in that there will be so much opposition to a resumption of control by the Centre that it will become difficult to create and maintain that atmosphere of good will which we consider essential to the success of our scheme". Shortly put their standpoint is that "the principle of provincial autonomy should be respected to the utmost limit possible consistent with provisions for speedy and active interference by the Centre in circumstances in which dereliction of duty jeopardizes the health not only of those under its charge but also of those living in areas outside its jurisdiction".

My close association with my colleagues has convinced me that they are not actuated by any desire to attack the principle of provincial autonomy merely in order to strengthen a Centre which is at the moment irresponsible. For the basic assumption underlying our report is that if India is to plan successfully her health programme, there must be fully autonomous popular Governments both at the Centre and in the provinces to lay down and execute plans. Nevertheless, I fear that some of our recommendations, to which I shall invite attention, are not based upon a full appreciation of the nature of a Federal Constitution upon the principles of which it is impossible for this country to go back. Far from securing full and active cooperation between the Centre and the provinces, they would actually lead to friction and bickering which might drag health into the arena of controversial politics. They are unworkable both from a constitutional and administrative point of view, and would create avoidable deadlocks between the Centre and the provinces. For these reasons, I have felt it incumbent to record my dissent from the recommendations noted in some of the succeeding paragraphs.

I concur with my colleagues in the view that in existing circumstances, the Centre should help the provinces by grants-in-aid for specific purposes. There is nothing inherently inconsistent with the federal principle in this proposal. The principle of grants-in-aid is not unknown to other federal constitutions. In the United States where the federal principle has worked successfully and where the states enjoy residuary powers, the Federal Government has been aiding by the Social Security Act of 1935, programmes of social reconstruction. In the Australian Act, which is based upon the principle of a federation in which the residuary powers vest in the provinces, the Federal Government has authority, of which it has taken advantage, to help the State Governments with grants for implementing programmes for the development of social services on specific terms and conditions. In India it is obvious that the provinces with their

limited resources will not be able to undertake the health programme as visualized by us. Ultimately, however, the right solution would be to provide the provinces with more elastic sources of revenue than they enjoy at present. It would be unfortunate, however, if the acceptance by the Centre of the principle of grants-in-aid to the provinces were allowed to prejudice their claims for such a revision of the Indian taxation system as would ensure greater justice to them.

But while I agree to the principle of grants-in-aid from the Centre to the provinces, I should like to stress that the financial assistance which the Central Government gives to the provinces should not be used as a lever for whittling down provincial autonomy but utilized for helping social development in the provinces on a coordinated and cooperative basis discussed and agreed to by the provinces and the Centre. The satisfactory working of such a system of grants-in-aid would depend upon the wisdom and cooperation displayed both at the Centre and in the provinces. It is obvious that the Central Government if it aids the provinces with financial grants, shall have to keep itself informed in the discharge of its responsibility to the Central Legislature, of how the purposes for which the grants given are being implemented by the provinces. Equally on the part of the provinces too it will be necessary to carry out faithfully in a spirit of wholehearted cooperation the policies they have agreed to and the conditions on which the grants have been made. If both or either of them feel that the conditions are. Intolerable, it will be open to both or either to seek accommodation or refuse to accept financial assistance. I have made these observations because as a strong believer in the federal principle for this country I desire to make it clear that I do not wish the system of grants-in-aid to be worked in such a manner as to make it virtually an indirect instrument of controlling the provinces by the Centre. I should also like to add that, in my opinion, the Statutory Board of Health, which we recommend, should be set up at the Centre, would go far to ensure harmonious cooperation and coordination of all health activities in the country. Its advice and cooperation should prove most helpful in determining not only the purpose, for which grants-in-aid should be given but also in ensuring that they are properly utilized.

I shall now proceed to indicate my dissent from those specific recommendations of my colleagues on the relationship between the Centre and the provinces which are unacceptable to me. The first issue on which I differ from my colleagues is their recommendation that the Government of India Act should be so changed as to provide for speedy and active interference by the Centre in cases in which dereliction of duty by a provincial Government jeopardizes the health not only of those under its charge but also of the country as a whole. Thus, in enumerating the functions of the Central Ministry of Health my colleagues stress that the Minister of Health should have power to take such legislative or executive action as may be provided by the Constitution as being action in respect of which All-India measures are necessary to safeguard the health of the country.

They specifically recommend in their chapter on Public Health that effective control of the spread of infection among the provinces, and between the provinces and the States, requires that executive officers of the Central Government should be able to intervene in the

enforcement of measures necessary to ensure the active cooperation of all the Central, Provincial and State agencies. In other words what they recommend is that for the prevention and spread of disease from one area to another, the Government of India should have power to issue orders to Provincial Governments which it can execute through officers under its control. Indeed, they seem to be of the view that the Central Government should have power of active interference in provincial administration not only in the interests of the country as a whole but also in order to protect the health of the province itself.

No case based on any review of the experience gained of the working of the Government of India Act has been made out by my colleagues for this recommendation. The legal position at the moment under that Act is that legislation in regard to the prevention and extension from one unit to another of infectious or contagious diseases of pests affecting men, animals and plants is an item under Entry 30, Part II, List 3 of the VIIth Schedule of the Act. It is a subject under the Concurrent List which means that the Federal, that is, the Central Legislature can pass equally with the Provincial Legislature, laws in regard to it. The Joint Select Committee have stressed that this concurrent power of legislation should be exercised by the Central Legislature only after previous consultation with the provinces If a Statutory Board of Health of the nature of an Inter-Provincial Council contemplated by Sec. 35 of the Government of India Act is set up, consultation and coordination of policy between the Centre and the provinces will automatically become much easier. In any case so far as legislation is concerned, the Central Legislature possesses concurrent rights of legislation in regard to infectious diseases The question whether the Central Government should have any larger powers than has been conceded by the Government of India Act 1935 in regard to the prevention of disease was not a new one before our Committee for it was expressly considered by the Joint Select Committee and Parliament at the time when the Act was passed in 1935. When the Government of India Act was under discussion in the House of Commons, it was suggested, for example by Sir Francis Fremantle that the Governor-General should have special responsibilities for the prevention not only of any grave-me race to "the peace or tranquility of India but also of any grave-menace to health. In the course of his speech on February 28, 1935, Sir Francis Fremantle pointed out that "epidemics are liable to flare up suddenly in any one or more of the provinces or states and they run like wild fire across from one end to the other. The early beginnings are unseen and then they get beyond control. There would be no time for the Inter Provincial Council to act as laid down in Clause 133". In answer to this line of criticism it was pointed out by the then Under-Secretary of State for India, Mr. Butler, that public health had been one of the transferred subjects for several years and that it was, no doubt, one of the subjects to which Indian' ministers had paid most attention and had responded most readily. He further emphasized that the prevention of the extension from one unit to another of infections or dangerous diseases affecting man, animals and plants had been deliberately put in the Concurrent Legislative List partly as arising from the discussions of the Joint Select Committee and partly out of the realization by the Government of the urgency of the question". He also pointed out that

under what is now Sec. 126 (2), the Central Government had authority to give directions to a province as to the carrying into execution therein of any Act of the Federal Legislature which related to a matter specified in Part 11 of the Concurrent List. It was also stated by Mr. Butler that provision had been made in the Bill (now the Government of India Act) for the setting up and maintenance of Federal Agencies or Institutes of Research, including scientific and medical research, and that by providing for Inter-Provincial Councils, the constitution was making it possible for some Central Board of Health or machinery to develop.

It is further interesting to recall that it was urged by Sir Herbert Williams and the Duchess of Athol in Amendments moved to the Government of India Bill when it was under discussion in the House of Commons, that certain aspects of public health, such as epidemic diseases, plague, the movements of insects, agricultural diseases were of nation-wide interest and that public health which knows no frontiers should be either an all-India subject or, at all events, a concurrent subject. In answer to this criticism of the Duchess of Athol Sir Herbert Williams and Sir Alfred Knox (all opponents of constitutional advance in India), it was urged by Mr. Butler that "the future of India must be built upon units which are really autonomous. Our service to provincial autonomy is not mere lip service; we realize its deep implications". He went on to stress that "the differences between the provinces as regards the incidence of disease follow, unfortunately, provincial idiosyncrasies and that, for example, it would not be conducive to the extinction of Malaria if we were to insist upon regulation by a Central Act of the provincial treatment of Malaria in different parts of India. Further, Mr. Butler laid emphasis on the fact that in order to eradicate disease and have' an efficient public health and sanitary service, it was essential to encourage local effort and provincial autonomy in these matters. "We believe", said Mr. Butler, "that interference by the Centre would not encourage local effort, but rather retard it and that we should be taking away from the locality the necessary stimulus to deal with its own particular problems".

I have quoted from Mr. Butler's speech at length in order to indicate that the question of the spread of contagious diseases from one unit to the other did engage seriously the attention of Parliament in 1935 when the Government of India Act was passed and that solutions which aimed at greater interference by the. Centre with provincial autonomy in health matters were ruled out at that time for good reasons. Indeed, it was pointed out with great force by Mr. Butler that "in no federation had the problem of health development been solved by coercion from the Centre but always by development of the units". He referred to the example of Australia and said: "The development of public health there arose out of the appointment of the Royal Commission in 1926 and it may he said that as a result of that, further coordination between the different states of Australia has taken place and has finally resulted in the establishment of an Australian Health Council and latterly. I am clad to say. of an actual Department of Health in Australia. That has been arrived at entirely by a process of coordination and cooperation between the units and not by any artificial control from the Centre. In India we envisage that the future will follow very much

the same line, or rather 1 may be permitted to hope so. Section 135 of the Government of India Act provides for an Inter Provincial Council for the coordination of and cooperation in matters of inter-provincial concern. Advantage can be taken under this section to facilitate the coordination and cooperation between the different units regarding health activities. Similarly under Sec. 103 the Federal Legislature can, if empowered to do so, legislate for two or more provinces by consent. Thus it is clear that ample machinery exists for ensuring cooperation and coordination between all health activities under the scheme of the existing constitution. The recommendation which my colleagues have made, *viz.,* that the Central Government should have power of executive intervention where there is danger of a spread of epidemic, would represent a radical departure from the policy laid down by the Act of 1935 and I can see no justification for it. For what I understand my colleagues to recommend is that the Federal Government should have power to carry out its orders through its own officers, when there is any danger of the spread of infectious diseases from one unit of the Federation to the other. Such intervention would mean supersession of the Provincial Government during a period of emergency so far as health activities are concerned. Action of this nature on the part of the Federal Government may well lead to a constitutional crisis between the Centres and any Provincial Government or Governments It can lead to a clash resulting in the resignation of the provincial ministry, and this in a country with its present communal cleavages. The necessary consequence of any taking over by the Central Government of the powers vested in the provinces to implement Federal Acts or directions given by the Central Government will be to drag health into political controversies in times of emergency when the utmost cooperation is needed between the Central and Provincial Governments. Furthermore, such a step would completely nullify the authority of the provincial electorate over its own Government, for it is obviously impossible for Provincial Governments to be responsible, in the intimate analysis, to two different electorates.

To sum up, the position, as I see it, is that under the Government of India Act the power to legislate in regard to the prevention of the extension from one unit to another of infectious or contagious diseases or pests affecting men, animals, or plants is an item under Entry 30 of Part II, List III of the VIIth Schedule of the Act. Thus the Central Legislature has ample powers of legislation after consultation with the provinces in regard to the spread of epidemics, etc.

Section 126 of the Government of India Act authorizes the Federation to give such directions to a province as to the execution in that province of any Central Act as may appear necessary to the Federation for ensuring that the provinces enjoy their authority in such a manner as not to impair or prejudice the authority of the Federation. Sub-Section 4 of Section 126 authorizes the Governor-General in his discretion to issue Orders to the Governor of any province which has not carried out any instructions given either to carry out the directions previously given or those directions modified in such manner as the Governor-General thinks proper. Under a system of real responsible Government there can be no question of the Governor-General acting in his discretion. The power to give such directions on •the failure of the Provincial Government (for the Governor means

the Provincial Government) will, under a system of real autonomy reside with the Federal Government. These are vast powers which coupled with the new Sub-Clause 4(a), which is from my viewpoint open to objection, to Section 126 have given a distinct unitary bias-in central matters to a Federal Constitution and I cannot understand' clearly what further powers my colleagues think should be vested in the Federal Government. If they think that the Federal Government should have power to carry out its orders through its own. Officers then obviously such intervention would mean a supersession of the Provincial Government so far as health activities are concerned during a period of emergency. Such action, as I have indicated above, on the part of the Federal Government may well lead to a. constitutional crisis between the Provincial Government and the Central Government. From the point of view of health administration itself and the emergent situation which will have to be dealt with, an eventuality like this will be most regrettable. The implication of a federal constitution is that provinces are autonomous within the sphere allotted to them. They cannot be treated as glorified municipalities subject to the superior authority of a Central Parliament elected on issues which have no relevance to those for which Provincial Governments are responsible. There are ways in which, without impinging upon the principle of provincial autonomy, harmony and cooperation between the provinces and the Centre in regard to the prevention of the spread of disease can be secured. In any case, the existence in India of a number of Indian States in which the writ of the Federal Government cannot run until they come into the Federation and agree to the executive authority of the Federal Government running in their States is a circumstance to which insufficient attention has been paid by my colleagues. The main object of their desire to invest the Central Government with such over-riding powers is to prevent the spread of disease from one unit to another. But in the absence of any control over the states, no amount of control over the Provincial Governments, however far reaching, can achieve this object. Is it intended that the Central Government should have power, in the interests of the prevention of disease, to issue orders to the Indian States or impose officers of its own on them? Can it be said that the danger of the spread of disease from states to British Indian provinces is less real than that of its extension from one province to another? If not, how is the problem of inter communicable disease solved by giving authority to the Federal Government to interfere with the executive authority of the provinces which are legally bound to carry out the directions of any legislation under the Concurrent List? I cannot help feeling that this aspect of the problem has been ignored by my colleagues. Moreover, a further question which remains to be considered in this connection is that of the personnel which will carry out the orders of the Federal Government. We have agreed to the principle that there should be no imposition of central officers on the provinces. We have further agreed to the principle that the provinces should have their own services recruited and controlled by them to carry out health activities Is it contemplated that when intervention takes place, the Centre will impose its own officials or is it visualized that the provincial officials will cease to be provincial servants for the time being and' become the servant of the Central Government? In the former case the Centre will have to keep a reserve of officers who will have no specific duties to perform in normal times and who will thus be at

burden on the tax-payer. In the latter case, provincial officer's .will be in the very difficult position of serving two masters, one in ordinary times and the other in exceptional times. This may affect their morale. The conclusion to which I am driven is that there is no method whereby under a system of democratic government based on the federal principle the activities of federal governments in regard to the execution of policies which the federal legislature can lay down under any Concurrent List in the Federation Act can be controlled without inviting a breakdown of the Constitution. I am, therefore, for these reasons quite unable to agree to the proposal of my colleagues in this regard.

2. I now come to another recommendation to which I cannot agree. My colleagues urge that the Central Ministry of Health should be empowered to meet the obligations assumed by the Central Government under the provisions of international treaties. The present position in regard to the implementation of international treaties is to be found in section 106 of the Government of India Act which I reproduce below: —

(1) The Federal Legislature shall not by reason only of the entry in the Federal Legislative List relating to the implementing of treaties and agreements with other countries have power to make any law for any province except with the previous consent of the Governor, or for a Federated State except with the previous consent of the ruler thereof.

(2) So much of any law as is followed only by virtue of any such entry as aforesaid may be repealed by the Federal Legislature and may, on the treaty or agreement in question, cease to have effect, be repealed as respects the province or state by a law of that province or state.

(3) nothing in this section applies in relation to any law which the Federal Legislature has power to make for a province or, as the case may be, a Federated State, by virtue of any other entry in the Federal or the Concurrent Legislative List as well as by virtue of the said entry.

It will be seen that section 106 as explained by Mr. Butler in the House of Commons refers especially to items in the Federal Legislative List and gives the Federation power to legislate for the implementing of treaties and agreements with other countries under Item 3 of the Federal Legislative List. According to this section if the Federation is to legislate for the implementing of a convention of the type mentioned, it must secure the consent of the units concerned. Thus Mr. Butler emphasized in the debate on the Government of India Bill on the 27th March 1935 that the arrangement embodied in the Section is in accordance not only with common sense but with the precedents and practice of all other Federations, and was envisaged by the farmers of the Peace Treaty when they dealt with the question of Labor Conventions'. It is not clear to me exactly what my colleagues want. But if it is their intention that the law should be changed so as to give to the Central Legislature power to legislate and issue executive directions in regard to the implementation of those treaties which require the consent of the provincial units, then

I am bound to state that I differ from them. I think the wise course implementing international treaties, agreements and conventions to proceed, as Sir Samuel Hoare stated in the same debate, not by coercion but by consent and to leave it to public opinion both in. the provinces and the Indian States to mobilize itself behind the movement for better conditions." The reason why the farmers' of the Act of 1935 considered the consent of the provinces and the States essential is that the services covered by international agreements are often services which come within the activities of the units and it is essential that in these cases they should be prepared to carry out the agreements.

3. I have agreed to the appointment of a separate Minister of Health at the Centre for the following reasons: —

(a) Health is a subject of major importance for the country as a whole and a separate Ministry would tend to emphasize this.

(b) A separate Minister will have no divided loyalties and be free, without having to consider or coordinate the claims of other nation-building departments, to press the claims of health, particularly in the matter of grants on his colleagues.

(c) A separate Minister would be useful, in view of the political position that he will occupy, in devising methods of coordination and cooperation between the Centre and the provinces.

(d) A separate portfolio of Health would ensure political supervision over a Department some activities of which would remain under central control and other activities of which would require sympathetic understanding of the difficulties and points of view of the provinces.

(e) A separate political chief is essential, in my opinion, to control the activities of permanent officials and experts and establish liaison between the Department of Health and the public generally.

But while I agree that there should be a separate Minister of Health, I am not happy with the phraseology of Clause (1) of the paragraph in which the functions of the Central Ministry of Health have been set forth. Clause (1) reads as follows: —

> "To study and plan schemes for health services, preventive and curative, for the whole of India to revise or modify such schemes from time to time and to assist and coordinate activities for the expansion and improvement of health service in the provinces."

The words "study and plan" can be taken to suggest that it will be for the Ministry of Health to evolve plans and for the provinces to implement them irrespective of the fact whether they are in agreement with them or not. If my interpretation of the clause is correct, then my colleagues contemplate an extension of the functions of the Centre to an extent which would reduce in health matters the autonomy which the provinces enjoy at present. For this reason I would make it clear in enumerating the functions, that the plans evolved by the Centre are only meant for the consideration of the provinces and that it will be open to them either to accept or reject them. I would accordingly modify the wording of this clause in this manner

> "To study and plan schemes for the consideration of the provinces of health services, preventive and curative, for the whole of India; to revise or modify such schemes from

time to time for their consideration and implementation and to assist and coordinate activities for the expansion and improvement of agreed programmes of health services in the province."

Similarly in Clause (6) which runs as follows: —

"To collect, tabulate and publish the vital statistics of the various component parts; to undertake a periodical census at such intervals as may be laid down by law; - to direct the organization and the carrying out of statistical studies in any part of the country designed to throw light on any aspect of the health problem."

I would recommend for the latter part of the clause the substitution of the word "recommend" for the word "direct". The latter part would thus read. ''To recommend the organization and the carrying out of statistical studies in any part of the country designed to throw light on any aspect of the health problem." This would preserve statistics as a completely provincial subject and thus mark no departure from the principle of the distribution of powers as laid down in the Act of 1935.

4. I have set forth, in a separate memorandum, my views on the reorganization of Local self-government with particular reference to health activities. This is a question which the provincial Governments need to tackle in the interest of the future health administration of the country. For upon the efficiency of local bodies will depend in no small measure the speed with which the health programme will be implemented.

I may indicate that I am in general agreement with the principles which underlie the Madras Public Health Act, and I should welcome the adoption of its general principle by other governments. Local self-government has suffered in efficiency because among other reasons (a) local bodies have not been supplied with adequate funds by the provincial Governments, (b) the method of dissolving them and ordering fresh elections when things are not going well with them has not been resorted to, reliance having been placed upon the superseding powers of Government, (c) the chairman has not been independent of the board and (d) the services have no adequate security of tenure and no standardized emoluments. I have suggested in a separate note that (1) the chairman should be directly elected and have powers independent of the board, (2) that his position should correspond with that of a mayor, (3) that for executive administrative control technical supervision should be substituted, (4) that there should be a Local self-government Board to advise the Ministry of Local self-government in regard to all grants in aid to the local bodies, (5) and that the services should be recruited by the boards on the advice of Local self-government Public Service Commissions and (6) and that they should have the right of appeal to this body in cases of censure or dismissal.

But while these proposals provide a solution of the problem in areas where the intensive scheme for health development which we recommend is not operative, separate treatment of units where the experiment of health service is being tried on lines recommended by us is necessary in the interests of planning. For these areas my colleagues suggest that district health boards—rural and urban—

should be appointed on which the local authorities can be given representation. Once elected, these health boards will be, more or less, independent of the local bodies in the district. The local bodies will be bound, however, to contribute a fixed proportion of their revenues to them. The difficulty that I foresee in this plan is that as District Health Boards, once they are constituted, will not be answerable to local bodies, the latter will have no direct incentive to improve their financial position by levying cases to the extent that the capacity of the population in their areas can bear. I would, therefore, make the District Health Boards accountable to the local bodies by requiring that (a) they should keep them informed of their activities and the manner in which funds allotted to them are being used, the Local Bodies having the power of considering and passing resolutions on the annual report, the annual accounts and the policies adopted by the District Health Boards in the year. (b) By giving to local and municipal authorities power to make recommendations to them for the carrying out of the health programme or alterations in their bye-laws etc. and (c) by requiring that the term of office of the members of the District Health Boards a substantial majority of whom shall be members of Local Bodies, shall not exceed a maximum period of two years, it being open to them to be re-elected. It may be desirable in these areas to recruit on a provincial basis certain of the more important posts but it is my emphatic view that recruitment to the other comparatively minor posts should be left in the hands of District Health Boards and that for this purpose there should be available to them the advice of a Public Service Commission for Local Self-Government.

The size of the central secretariat on which my colleagues lay stress will depend; of course, I take it, upon the extent to which our proposals both in regard to the Centre and the provinces are to be implemented. I have no doubt that our recommendations are not intended to make the administration top heavy. I say this in order that there may be no misunderstanding as regards the reasons which have influenced me in agreeing to the remodeling of the secretariat on the lines suggested by us.

I should also like to say that, in my opinion, the question of the salaries to be paid to the members of the health services, both superior and inferior, is one which cannot be isolated from that of scales of pay generally agreed to by the country in regard to other professional, technical and even administrative services. It is my considered view that the present scales of pay are too high for a country with the national income of India. This question of salaries should be considered by a separate committee which can deal with this problem from a coordinated point of view.

I may also say that. I would prefer the medical benefits under the Health Insurance Scheme, if any such scheme is eventually decided upon, to be administered by the Health Department until such time as this country comes to possess a proper Ministry of Social Security. My reason for this recommendation is that the problem of administering Health Insurance on a coordinated basis may be easier if Ministers both in the Centre and in the provinces are made responsible for both medical benefits and cash benefits. On this point I confess that the arguments are evenly balanced and it is, therefore, only in a tentative way that I make this suggestion. I

would suggest a separate departmental head for the administration of cash benefits. He will be under the control of the Ministry of Health. So will the head of the medical benefit section too be under the Health Minister. The two will be able to work in greater co-operation if they have to serve one head.

Minute on Local Self-Government by the Hon'ble Mr. P. N. Sapru

PART I

A question to which my colleagues have devoted some attention is that of the relationship of health authorities at the provincial centre to Local Bodies. Shortly put, their view is that the interests of planning require the replacement of the existing local authority, or authorities, in demonstration areas by a new type of organization capable of creating and maintaining uniform health services throughout the area or areas. In regard to the remaining parts of each province, their main recommendation is that measures on the lines taken in the Province of Madras by the Public Health Act of 1939 may be adopted for raising existing standards of health administration to a reasonable level of efficiency.

My point of view is somewhat different from that of my colleagues and I, therefore, consider it necessary to set it forth as briefly as I can. Hasty condemnation of Local Bodies, urban and rural, is easy but in passing a considered verdict on them, it must not be forgotten that their grants and resources are grossly inadequate and even with the best of will, they are not in a position to carry through big reforms. The general poverty of the country is reflected in their revenues and public health has, in the past, been looked upon as the *Cinderella* of provincial departments. It is not claimed that the administration of Local Bodies is ideal; but it must be remembered that they have limited resources, that provincial Governments themselves have not helped them to the extent that they should have with financial assistance, that the only remedy which Provincial Governments have employed in improving the tone of incompetent Local Bodies is supersession and that they have done little to stimulate the growth of public opinion on Local Self-Government by resorting to dissolution for purposes of focusing attention on local maladministration. It is proposed to confine this note to a few suggestions which would make Local Bodies more efficient and remove, without taking away any of the powers which they possess, some of the defects in their working It is also proposed to consider some methods whereby even in the demonstration areas planning can be reconciled with the autonomy of a new type of local body suited to promote the creation and maintenance of a uniform health service throughout the area.

Control over Local Bodies is exercised at all events, in the United Provinces with which I am most familiar, through Commissioners who have a good deal of revenue work. As an alternative to the present system, I advocate that control over Local Bodies should be vested in the Ministry of Local Self-Government who should be advised for this purpose by a Local Self-Government Board. The Chairman of the Board should he the Minister of Local Self-Government. Its Members should include (a) a certain number of

ministers, or their deputies, dealing with such portfolios as Education, Public Health Labor, Social Security, Communications and. Industries; (b) Elected representatives of Municipal and District Boards and the Chairmen of these boards; (c) Elected representatives of Medical and Engineering professions, and of Universities, Chambers of Commerce and Trade Unions as well as (d) a certain number of public men nominated by the Minister of Local Self-Government to represent interests or communities which have been unable to obtain representation through (b) and (c). The Board should be required to elect a Standing Committee, predominantly non-official in nature, which should be available to the Ministry for advice from time to time.

The primary functions of the Board will be (a) to evolve coordinated policies for Local Self-Government Bodies in regard to the functions entrusted to them; (b) to advise the Ministry on matters-referred to it; (c) to pass resolutions of a recommendatory nature for the consideration of the Ministry and Local Bodies for promoting, Local Self-Government; and (d) to advise the Ministry in regard to the distribution of provincial grants for the various purposes falling, under the purview of Local authorities.

The conditions upon which grants are to be given should be specifically laid down and the amount of the grant should vary with the extent of co-operation shown by an individual Board with the policy laid down by the Provincial Ministry after consultation with the Local Self-Government Board or its Standing Committee. It should be open to the Ministry to give no grant to a Board where it finds that it has not been co-operating with the policy enunciated by it.

The various heads of departments would, under the scheme contemplated, be the principal administrative officers for supervising" and inspecting the local authorities. The staff of these departments would need to be increased. Commissioners or their agents, the district officers, would cease to exercise control over Local Bodies. The Local Self-Government Board to be constituted under the scheme outlined by me should have a Secretary whose status and emoluments should correspond with those of Secretaries in other departments of Government. The accounts of Local Bodies should be subject to audit by auditors appointed by Government. Local Bodies should be required to submit their requirements for grants to the Provincial Governments who would, in distributing them after taking into consideration the advice of the Local Government Board' or its Standing Committee bear the following principles in mind: —

(a) the willingness, as disclosed by the system of local rates, of a local body to levy taxation in proportion to the capacity of the various classes of rate payers;

(b) the schemes, and their practicability, which the Local Body in question has in mind;

(c) the efficiency of the services it provides;

(d) the treatment it metes out to its public servants;

(e) the zeal, if any it has shown in promoting the welfare of the poorer sections of the population and

(f) the needs of the area under the Local Body and the order in which they should be taken up.

The Provincial Government should further keep a staff of experts in town planning, sanitary engineering, industrial health and labor welfare activities and such other activities as may be regarded useful. The advice of this staff should be available to Local authorities for schemes initiated by them.

Local Bodies should be subject to periodical inspection, on behalf of the Minister of Local Self-Government by administrative heads and by officers specially appointed for the purpose. Their reports should be available to the Local Self-Government Board when it is called upon to discharge its function of advising on grants. The reports should be published, where possible, and the Secretary should be responsible for an annual review of Local Self-Government administration. The Director of Public Health should have the powers in relation to health matters envisaged for him in the Madras Public Health Act of 1939.

The system outlined above would ensure (a) more regular as also expert inspection of boards (b) greater control over them by the provincial Government through a system of grants-in-aid and (c) popular plus expert control. The local self-government board would, it is claimed, make planning workable with popular control. It would not impair the responsibility of the Minister in Charge as it would be an advisory body of high status.

PART II

One of the defects from which Municipal administration at the moment suffers is the position of the Chairman. In my opinion it is essential, for the smooth functioning of local administration to secure for the Chairmen of Local Bodies independence of tenure. The Chairman in a bigger Municipality, that is, in a town of over 80,000 population, should have the status of a mayor, should be called by that name and should have a high place in the warrant of precedence. In my opinion, the time has arrived when the mayors of presidency towns should be given the status of 'Lord Mayors' and have a place in the warrant of precedence equal to that of a member of the Upper House of the Central Legislature. I may mention that the Mayors of Sydney and Melbourne in Australia are called Right Honorable. The Mayors and Chairmen should be elected directly by the people of the local area concerned. As they will be directly elected by the people they will not be affected by any adverse vote of non-confidence. They should have the right, where a Board is obstructive, of advising Government to dissolve it and hold fresh elections. These suggestions have been made with the object of securing a good class of person for the Mayoralties and Chairmanships of the larger Municipalities.

Where there is a persistent conflict between a local authority and its Chairman, the Minister, on the advice of the Standing Committee of the Local-Self Government Board and in urgent cases without, should order fresh elections either—(a) of the Local Body or (b) of the Chairman, or (c) of both, as the case may be.

The servants of the Local Body should be answerable to the Chairman or the Mayor and take orders from him. The normal method of dealing with a Board, which is proving obstructive or inefficient, should be not supersession but a fresh general election. These reforms should help the formation of healthy civic opinion on matters

of importance and interest to the people of the town or area concerned.

Provincialisation of services at present controlled and recruited by local authorities will, I apprehend, be unpopular. In fact, I would have no provincialised services in the local bodies. Further, provincialisation is likely to lead to friction between these bodies and the public servants who have to work under them. The desire of the services for security of tenure is understandable, and it is true that insecurity leads to a lowering of standards and falling off in the quality of recruitment. But there are other ways of securing this end and, in my opinion, we should carry the maximum number of people with us in the reforms we suggest in local administration. The scheme which I suggest for the future recruitment of all Municipal and District Board services is as follows: —

(1) A Local Self-Government Public Service Commission should be constituted by an Act of the Provincial Legislature in each province.

(2) It should normally consist of a Chairman nominated by the Ministry of Local Self-Government and of two or more members appointed by the Minister of Local Self-Government. All matters relating to the health services under Local Bodies, including their recruitment, conditions of service and disciplinary control should be referred to this Commission and its advice should, normally, be followed by the Ministry of Local Self-Government. It should be open to the Commission to divide itself into sub-committees for the purposes of selection of officers.

(3) All appointments including those of sanitary inspectors should 'be made by local bodies on the recommendation of the Local Self-Government Public Service Commission. When the Commission or a sub-committee of it is making a recommendation for appointment to a particular local body, it should Copt a Member of that Board for the purposes of advising it. This coop-ted member will, for the purposes of that sub-committee, have equal rights with other members of the sub-committee.

(4) The Local Self-Government Public Service Commission constituted as indicated above, should be required to send three names in order of preference. It should be open to the Local Body to select any one of the three names suggested by it.

(5) If a local authority is dissatisfied with the names selected, it should have the power to refer back the nominations to the Appointment Committee, but if the latter adheres to its previous view, the Local Body will have to select out of the panel suggested by the Appointment Committee.

(6) Where possible, the principle of competitive examinations should be preferred. Where competitive examinations have been instituted, appointments will go by merit as determined by the examination and interview results. The examination should include a *viva-voce* test.

(7) The appointing authority, under the scheme, will thus be the local authority. It will appoint and control the services subject to the reservations and qualifications stated above.

(8) The local authority should have the right of transferring, censuring, demoting and dismissing its servants in such manner as

may be prescribed by the Acts laying down the procedure for this-purpose. It is contemplated that the procedure should provide for a Committee of Inquiry before action is taken, or emergency action taken by the Chairman, or Mayor, is confirmed.

(9) Officers affected by the order of a local body should have the right of appeal to the Local Self-Government Public Service Commission, whose decision on this point should be final.

(10) Two or more Local Bodies may, by mutual agreement, evolve machinery for the transfer of officers serving in one authority to another and *vice-versa.* These mutual arrangements will enable officers of Boards to have experience of more than one Board. There is no reason why these mutual arrangements should not exist between bodies responsible for urban and rural areas.

(11) Scales of pay and conditions of service should be laid down by the Local Self-Government Board after consultation with the local' authorities. The procedure for such consultation should be laid down in the Act.

(12) Clerical jobs may also be filled by the Local Self-Government Public Service Commission, if the Local Body so desires.

(13) Posts of Chaprasies, Jamadars, etc., may continue to be filled by the local bodies, but they should be statutorily required to have special Selection Committees for this purpose.

PART III

In dealing with the question of the type of local authority needed for areas in which intensive work will be concentrated in the short period programme, my colleagues stress that it will be desirable to replace the existing local authority or authorities in these areas by a separate organization capable of creating and maintaining a uniform 'health service throughout the area. They, therefore, recommend the establishment of District Health Boards on which local: authorities in areas, rural as well as urban, can be given representation. The areas in which experimental work will be done include the province of Delhi, in the case of which my colleagues recommend' that a Provincial Health Board should replace existing local authorities responsible for health administration in their respective areas. The change recommended by them in the system of local administration, so far as health is concerned, is thus of a far-reaching-nature, likely to affect the whole basis upon which Local Self-Government is founded in this country. 'In the case of a city like Delhi, where a demonstration centre is intended to be created,' health activities administered by various Local Bodies will be merged into a province-wide authority. The reason for this suggested overhaul is that the separate functioning of one rural and two urban health authorities will militate against the development of an efficient and integrated health service. It is essential so it is urged, to have an organization which can exercise supervision and guidance over the growth of health administration in the peripheral units even as far back as the villages. The effect of these proposals will be to disintegrate Local Self-Governing institutions in the Delhi Province and other administrative areas where the short-term programme will he tried in an intensive form. I cannot help feeling that the proposals are not likely to meet with popular support. They would deprive Delhi City in particular of an opportunity to develop a first class

municipal corporation round which would help the growth of the civic life of the City.

The setting up of Provincial Health Boards in the case of Delhi Province and of District Health Boards in the case of other administrative areas would lead to the inevitable establishment of similar Boards for Communications, Education and Water-supplies. Such Boards would function, more or less, independently of any city or district organization which can view the problems of health education, communications, water supply and housing in a connected or correlated manner. Men of position interested in civic life would have less incentive to offer themselves for elections to these boards as their status is certain to be less than that of municipal or district board which deal with all aspects of a city's life. It is, in my opinion, therefore, essential that in the name of planning, which admittedly necessitates some centralization, an experiment should not be tried which would strike at the very foundations of Local Self-Government. Assuming that it is desirable to merge Local Bodies into a province-wide authority as in the case of Delhi, or a district authority as in the case of other demonstration areas, it is essential to secure that the local authority so set up shall, while empowered to split itself up into separate committees or boards for the more convenient transaction of business, have the ultimate control over the activities of Boards or Committees dealing with the special subjects with which they are charged. Confining myself to the Delhi Province for the moment I would create an autonomous corporation with a Chairman elected directly by the people dealing with all activities for which either Municipal or District Boards in the province are responsible. This province-wide Board shall be the supreme governing body for the area concerned and shall have the power to review the acts of the Committees set up by it. It may delegate such of its functions as it chooses to Standing Health Committees or other similar bodies but it and it alone shall, on their recommendation, make bye-laws, consider and cancel them, levy local taxation, consider and pass resolutions on the Annual Report, the Annual Accounts and the financial estimates, which shall be submitted to it for approval by its Chairman. In other words, the power of passing the Budget and sanctioning expenditure in accordance with certain principles laid down in the Act constituting the Corporation shall reside exclusively in the Corporation, save and except in so far as it-may have delegated certain powers to a Committee or Board elected 'by and responsible to it.

Under the proposal adumbrated above, urban and rural authorities have been merged into one. This has been done to ensure coordination. This new type of Council shall however, continue to be elected by territorial constituencies plus where necessary some special representation for certain interests such as the medical profession. Standing Committees or Boards constituted by the Local Self-Governing authority shall be definitely subordinate to it. They shall have no power independent of the District Council which is the name by which I suggest this type of Local self-governing authority should be known. I may state that I am in favor of the Act prescribing the constitution of the Provincial Council in the Delhi Province and the District Council in other provinces laying down that the Health Department shall exercise, broadly speaking, the amount of control which the Health Department in Madras possesses

over local authorities under the Public Health Act of 1939. Regarding the mode of appointment of Health Officers and other health staff including sanitary inspectors, my preference is for a scheme which lays down minimum standards in the matter of qualifications, etc., but which leaves actual selection to the District Councils concerned from a panel suggested by an Appointments Board or Boards on which a Local Self — Government Public Service Commission to be created in accordance with my recommendations on local-self government and the Council itself are both represented. Officers so appointed should be directly responsible to the Chairman for day-today administration. The power of the boards to censure, suspend or dismiss their officers should be subject to appeal to, and review by, the Local Self — Government Public Service Commission, whose decision should be final. It is claimed for this scheme that while it does not impinge upon the autonomy of Local Bodies, it at the same time ensures fair treatment for the officers serving under them. Further merits of the scheme which I have put forward are that (a) it ensures that local cases shall be levied by a body competent to take all the needs of a city or District into consideration; (b) it does not diminish the measure of self-government enjoyed by Local Bodies at the present moment; (c) it makes for their smooth working, by giving to them a Chairman directly elected by the people and possessed of sufficient authority to make his impression felt upon the administration of the city, as a whole, and (d) it makes no breaches in the essential principles upon which these Bodies have been functioning for almost two generations. What it proposes to do is to adapt the existing system of separate Local Bodies for urban and rural areas by one central District Council so that it may effectively carry out the health programme outlined by the Committee. The Chairman of the Provincial Council in the case of Delhi Province and District Councils in other demonstration areas shall, of course, be elected directly by the people.

CHAPTER XVIII

PROFESSIONAL EDUCATION

Introduction

1. Our specific recommendations for the future in connection with professional education are designedly limited in their scope. They only aim at a detailed depiction of the development we suggest as a short-term policy covering a space of 10 years. In dealing with the period beyond this initial stage, it would be unwise to indulge in any detail or to do more than indicate in the broadest outline the general lines of further advance. If the foundation is well and truly laid during the first 10 years on the lines suggested by us, we feel that subsequent progress will be possible at a greatly accelerated pace. Modifications, which experience or altered circumstances may dictate, can be made without any serious retracing of the initial steps. Our main objective during this period must be the provision of adequate staff suitably trained to enable the plan of health work which we envisage to be developed as early as circumstances permit. Progress towards our eventual goal depends on the fulfillment of this requirement and it must therefore be conceded the highest priority in our programme. We shall deal with professional education under the following two heads

A. Certain general questions germane to the subject of professional education which call for preliminary notice and

B. Our specific proposals in respect of education for the following types of health personnel:

(1) Medical Education;
(2) training in Dentistry;
(3) training in Pharmacology;
(4) training of certain types of Public Health Personnel;
(5) training of Nurses and Mid wives;
(6) training of Hospital Social Workers and
(7) training of Technicians.

A. CERTAIN GENERAL QUESTIONS FOR PRELIMINARY CONSIDERATIONS

(1) Doctors

(a) The Target in regard to the Number of Personnel

2. It has been pointed out that there are approximately 47,400 doctors available in the whole of British India. The inference, however, cannot be drawn from this figure that taking the total population into account, one doctor is available for about 6,400 of the population. We are faced with the obvious fact that large numbers of doctors congregate in the cities and larger towns, while great tracts of the countryside are left un-served by any medical men qualified in the scientific system of medicine. There are undoubtedly a certain number of persons practicing the indigenous system in these rural areas with varying degrees of efficiency. But confining ourselves to the system with which alone we propose to

deal in this report, we can say quite definitely that the proportion of doctors to the rural population is generally such as to result in an almost total denial of effective medical aid to the people. We have calculated that the fulfillment of our long term policy will demand something like 250,000 doctors. We are, however, here concerned only with the next 10 years and at the end of this period, we consider that the 47,400 doctors available today will, if our proposals are carried out, be increased by about 22,000 while the number required for the implementation of the short-term programme is about 29,300. This increase will of course be subject to the wastage during this period. Even so, the number of doctors available for public service will be well in excess of the number required for our scheme during the short-term. The problem is, however, essentially one of distributing them over the rural areas where they are at present few in numbers. Their proper distribution to meet the requirements of the general population of this country can, we believe, only be ensured through a paid Government service which will secure the effective provision of doctors where they are most needed. This we have already pointed out.

3. If our recommendations are accepted and given effect to immediately, then at the end of the first ten years, the medical teaching institutions in the country should be capable of an annual output of 4,000 to 4,500 doctors as compared with less than half that number of graduates and licentiates combined produced each year at present. This may not be considered a very striking advance. Nevertheless it is substantial and the early years must necessarily be a period of limited growth during which initial impediments, which we will refer to later, have to be overcome and the conditions for more rapid progress created. We feel confident, however, that at the end of the first 10 years, it will become possible to increase considerably the momentum of the advance if the driving force behind it is not allowed to flag.

(b) Factors impeding speedy expansion of Medical Education

4. In any scheme for the expansion of medical education, the most important consideration is the provision of teaching staff possessing proper qualifications and the necessary aptitude for the work. War conditions have rendered it impossible or at least extremely difficult for members of the medical profession in India to visit foreign countries within the last six years to acquire such additional qualifications as would make them suitable for appointment as teachers in medical colleges, This would not have been a serious handicap if the authorities concerned had realized adequately their responsibility for the development of post-graduate medical education No steps worth mentioning have been taken, however, to create a proper postgraduate council of medical education at any of the large teaching centers and both the Universities and the Government must share the responsibility for this failure. The problem of providing an adequate number of qualified teachers for the medical colleges, visualized in our proposals, is a serious one. There are, however, ways in which it should be possible to overcome or at least reduce the difficulties which confront us.

5. We have referred elsewhere to the All-India Medical Institute which, if it is brought into existence, will not only provide a centre for the training of medical teachers but will combine the provision

of the most up-to-date hospital facilities for the education of medical graduates and opportunities for comprehensive research without which teaching and training must fail in their object. When this centre-is fully developed, it will, we hope, provide a steady, if limited, stream of teaching personnel of the highest quality for the various medical colleges in the country. But before this restricted source of supply can be drawn upon, some considerable time must elapse and in the meantime the Medical Colleges cannot wait with closed doors for the teachers they need.

6. It may be possible to obtain a few from outside the country on-short-term contracts, but it is extremely doubtful if this is likely to prove a fruitful source of supply. The conditions created by the war have seriously depleted the teaching personnel of medical colleges in Great Britain and the same is probably true of the United States of America. It would appear that the demand for both full-time and part-time teachers in medical colleges in the United Kingdom will be stepped up and as the Good enough Committee has itself envisaged, there may not be enough to meet even British requirements for some time to come.

7. We do not consider it desirable to recruit persons merely because of their academic attainments if they do not possess teaching experience and the general qualifications necessary for the higher grades of professional staff, *i.e.,* research work, specialist qualifications and teaching ability. If, however, it is possible under present conditions to obtain the services of such men from abroad, they should be recruited on short-term contracts to fill a gap which we must ensure is only temporary. It should be the definite endeavor of the State to provide all facilities for selected medical men trained in India to acquire such qualifications as are necessary to enable them to supply the bulk of the ordinary teaching staff of the medical institutions in this country. For this purpose, we would suggest that suitable persons with good qualifications should be sent abroad for periods ranging from 6 months to 2 years to some of the leading medical schools in Great Britain or America to equip themselves especially to fill teaching posts. It should be possible to find people of the requisite caliber and qualifications in the country today and in attempting to do so, regard should be had to the Indian officers serving at present in the Army who must by now have accumulated a rich store of experience in many branches of medicine. It seems desirable that, if such persons are selected, they should have early priorities guaranteed them when the question of demobilization is taken up to enable them to undergo abroad short courses of training as teachers. we are of opinion that as soon as possible, an Endeavour should be made to send about 200 selected members of the medical profession in India from the various provinces to countries abroad to acquire a knowledge of the methods of teaching and up-to-date experience in their respective subjects on condition that they find themselves on return to serve in the medical teaching institutions of the country. In particular, we would welcome such arrangements being made in the following branches of study, Anatomy, Physiology, Bio-chemistry, Pathology, Bacteriology and Pharmacology.

8. The facilities for postgraduate training and for research work in foreign universities, which can be made available to our medical

graduates in the coming years, will naturally be limited. It is therefore essential that, in the interests of the country, such opportunities should be made use of to the fullest possible extent. The Central and Provincial Governments will naturally employ the official representatives of the former in London and Washington for the proper 'placing' of their own scholars. It is desirable that those medical men who seek, independently of financial help from Government funds, similar opportunities for advanced training in those countries should have clear ideas as to the courses of study they desire to pursue and the institution in which they desire to prosecute them, and should have secured guarantees of admission to the latter before leaving India. We feel that in this way the limited facilities available for training abroad will be utilized to the best advantage of India. We have been informed that, in the past, many graduates from this country used to arrive in Great Britain with no definite plan of work and drift from one institution to another collecting a mass of diffuse knowledge, with little practical relation to their future activities in India. Our proposal is intended to minimize the? Occurrence of such eases

9. We hold the view that, ordinarily, no one should be appointed head of a department of study in any branch of medicine who does not possess a high post-graduate qualification; some recognized research work to his credit and has not also had opportunities of visiting foreign Universities for a minimum period of six months.

10. In this connection, we would invite the attention of those concerned to the desirability of laying down carefully considered minimum qualifications for the various grades of teachers. Such minimum standards obtain in some of the Indian Universities and it should be the rule that no one should be appointed as a teacher who does not fulfil these minimum requirements.

11. As a general policy we would suggest that the younger men should be encouraged in increasing numbers to acquire post-graduate qualifications in this country and that it should be made possible for the best of these, at a later stage, to round off their medical education by visits to foreign countries for periods of from 6 months to one year.

(c) The Type of Doctor for the Future

12. We have given serious consideration to a suggestion that in the conditions now prevailing in the country, there is room both for the fully trained doctor and a less elaborately trained type of medical man whose main recommendation would be that he could be produced in larger numbers.

13. The great lack of doctors leaves the bulk of the population of the country without medical service of any sort and it is contended that the insistent need, therefore, is to increase the supply of medical men. In these circumstances, it is argued that a less elaborately trained doctor is better than no doctor at all and that such a doctor, though he may not be able to supply the same service as a more fully trained medical practitioner, can still make a valuable contribution to the health of the community in general and supply some measure of medical help to the individual who, but for his aid, would be entirely without medical attention at the hands of exponents of the system of modern scientific medicine.

14. The "Feldsher" type of doctor has proved a valuable part of the medical organization in Russia and there appears to be no reason why he should not fulfill an equally effective purpose in this country. This is obviously a point of view which demands most careful consideration. It cannot be ignored or overridden by an ex cathedra pronouncement.

15. We have given considerable thought to the question and the conclusion which the very large majority of our members has arrived at is that, on the whole, having regard to the limited resources available for the training of doctors, it would be to the greater ultimate benefit of the country if those resources were concentrated on the production of only one and that the most highly trained type of doctor, which we have termed the "basic" doctor. We have made detailed recommendations, later in this chapter, regarding his training.

16. The following are some of the considerations which have influenced this conclusion: —

(a) No one, it is believed, would suggest that the expedient of having a corps of less completely trained medical men should be resorted to if fully trained doctors were available in requisite numbers. It must, therefore, be assumed that such an expedient is proposed as a temporary device and not as a permanent feature of the medical organization of the country. Its value, even as an interim expedient, is open to varying assessments.

Clearly, if the argument of numbers is the decisive consideration, then its validity must vary inversely with the standard of the training given. The lesser the training and hence the more rapid the production of such a doctor, the stronger would of course be the argument in support of such a plan. Whatever may be the intentions of the exponents of the view that there should be two grades of doctors, there will always be the temptation to increase numbers by lowering the standard of training. Such a tendency might well lead to deplorable consequences. On the other hand, if the shorter training is to extend to four years or slightly less as compared with the 5 years for the "basic" doctor we contemplate, the advantage to be derived from larger numbers may be so attenuated as to be hardly worth achieving.

(b) Our "basic" doctor's training includes, as an inseparable component, education in the community and preventive aspects of medicine. A hastily manufactured doctor is not likely to be able to find time for effective training in these departments of health activity which we all consider of vital importance. It is open to question whether the ultimate benefit to the wider and more fundamental interests of the community derived from a smaller number of better trained doctors, adequately fitted to fulfill the comprehensive role we are laying down for them, will not be greater than that resulting from a larger number of doctors who, by their inadequate training, would be unfitted or at least far less fitted for the wider duties which the doctor of the future must be capable of discharging.

(c) With the limited training facilities at our disposal, which' are not susceptible of immediate expansion on any very substantial scale, the diversion of a medical educational institution from the task of producing fully trained doctors to one of producing a type

of personnel with inferior training is to be deprecated, for it must inevitably postpone fulfillment of the ultimate aim which may be defined as a complete health service for the community at the hands of a fully trained and competent staff.

(d) A doctor with the 'basic' training proposed by us, supported by adequate and efficient technicians and other ancillary personnel is capable of extending his sphere of public utility to an extent which would be quite beyond the capacity of an imperfectly trained doctor and this fact may largely discount the argument of numbers, on which the advocates of the view that any kind of doctor is better than none rely. We therefore consider that the limited funds likely to be available will be much more advantageously utilized in training larger numbers of essential ancillary personnel, without whom a doctor's sphere of utility must be strictly circumscribed, than on merely producing larger numbers of a less effective type of medical man than the 'basic' doctor.

(e) An imperfectly trained doctor is likely to forget his limitations and to attempt medical ministrations beyond his capacity to the possible detriment of the public.

(f) The production of two types or grades of doctors is to be deprecated on general grounds. The doctor with a lower status tends to develop an inferiority complex and a chronic discontent which cannot but be inimical to good work.

(g) We have had overwhelming evidence in favor of having only one grade of doctor—the highest.

(h) The licentiate class has done yeomen service to the country but the Associations of Licentiates have been unanimous in the view that this class of doctor should not be perpetuated.

(i) The acceptance of this view by two Provincial Governments when Congress Ministries were in power and the movement towards it by others seems to indicate that there is a powerful volume of practical administrative experience against the alternative which has been fully tried out.

(j) This view, which we have accepted, is not based on purely personal grounds. It takes into account the effect referred to above, which cannot but be reflected in a doctor's work if he is dissatisfied with the conditions under which he has to carry on his professional duties, with the status of comparative inferiority which he must inevitably occupy as-compared with the medical graduate, and if he is constantly laboring under a real or fancied sense of grievance.

17. While, therefore, we feel that the dissenting view held by six of us merits every consideration, the rest of us are of the opinion that the balance of advantage lies indubitably with the conclusion that taking the longer view, it is in the best' interests of the community that the available facilities should be concentrated on the production of one type of doctor with the basic education we are recommending. We attach the minute of dissent on this question signed by those of our colleagues who do not agree with the view of the majority. We venture to think that there is really no fundamental disagreement between the views of the majority and those of the dissenting members. The majority contemplate it will

be ten years before the training of licentiates can be completely discontinued, while the minority, who also agree that such discontinuance is desirable, merely suggest that a longer period should elapse before the licentiate class ceases to be produced.

Two other notes on this subject are also appended at the end of this section. (d) Portal of Entry into the Medical Profession

18. At present the portal of entry to the medical profession is either through the University or through Examining Boards which control medical education. We have just recorded the conclusion that there should be only one type of doctor for the future and that he should receive the highest type of training. We consider therefore that there should, hereafter, be a single portal of entry to the medical profession and that portal should be the Universities. We are confirmed in this view by the reasons advanced by the Inter-Departmental Committee on Medical Education in Great Britain in support of university medical education. This is what the Committee has to say on this subject: —

> "We recommend that in future only medical schools that are integral parts of Universities should undertake the training of undergraduate medical students. To agree to the training of medical students in institutions which are not parts of Universities, is to support the belief that doctors can be produced in intellectual circumstances that are not the best that the community provides. We cannot accept such a belief. Medicine is a branch of human thought and activity that demands and provides opportunities for the fullest development of humanistic and scientific talents. It is a branch of higher learning and the most favorable training ground for those who follow it is in the recognized centers of higher learning—the Universities. We are certain that it is as full participants in the life of Universities, having close associations with those following other branches of learning, that teachers of medical students will receive the strongest stimulus to give of their best, and medical students will be encouraged to develop those qualities of mind and character that make a good doctor. A University Medical School presents the most favorable conditions for maintaining and improving educational standards; for securing a consistent selection of good students; for attracting teachers of the highest caliber to the responsibilities of medical education, and for keeping; alive their enthusiasm. It provides the best means for effecting essential contacts between teachers of Medicine and persons working in other spheres of learning, particularly the natural and social sciences; for ensuring the provision of accommodation and equipment of a standard and on a scale that is required; and for diffusing beneficial educational influences throughout the health and hospital services.

We strongly commend this view and suggest that the only channel in India for the grant of medical qualifications should be the

Universities. They are chartered bodies which will act in conformity with the standards laid down from time to time by the Ail-India Medical Council and which will be in a position effectively to control the pre medical and medical standards of education required for the type of doctor which the country needs.

(e) **Co-education**

19. Co-education in Medical Colleges is a subject on which we think it necessary to express our definite views. Except the Lady Hardinge Medical College for women at Delhi and the Vellore Missionary College, which we understand will shortly be made a co-education centre, all other colleges in the country admit both men and women. In some of the latter, the proportion of women to men is 1 to 2, while in others only a very few women, half a dozen or at the most 10, have so far been admitted each year. We must ask ourselves the question whether, in a profession like medicine, it is not desirable to have co-educational institutions and whether it is really in the interests of the future woman doctor that she should be trained in a purely women's medical college. At (the Lady Harding Medical College, women students receive all their training in a hospital exclusively for women except for a short 3 months' course at the Irwin Hospital where the Superintendent gives clinical demonstrations in men's wards. There are two aspects to this question. A complete course of training for women in any medical college is more likely to be ensured *ii* the hospital to which it is attached has beds for men as well as women, for, in the •opinion of many, there are diseases which can be studied more effectively in men than in women. The Woman's College, therefore, which is without a proportion of beds for men, cannot function with the same efficiency as a college where hospital facilities are provided for patients of both sexes.

20. The second consideration is perhaps even more important. Women doctors, in the exercise of their profession, cannot confine themselves rigidly to contacts with then own sex. When their work takes them into the homes of their patients, contact with the male members of the household may often be inevitable and indeed sometimes necessary in the interests of their patients. Moreover, with the larger emphasis that will hereafter be placed on social medicine, the woman doctor of the future must of necessity know how to move with men and women alike, of all classes and conditions, must cultivate tact and *savior fair and* be able to hold her own in difficult circumstances in which she may often find herself. A co-educational institution is, in our opinion, the best training ground and preparation for the work that lies before a woman doctor.

21. It seems, therefore, highly desirable that the policy in future should be to encourage co-educational institutions. But conditions being what they are and the demand for women doctors being great, the need for women medical colleges will remain for some time. In any case, the provision within the same campus of beds for men, medical, surgical and perhaps some of the specialties with a proper out-patient department if necessary, seems advisable so that students may have access to male as well as female patients for purposes of study and observation. We recognize,

however, that there are other considerations which will have to be given due weight in coming to a decision in this matter.

(f) **Entry into Medical Colleges**

(i) *Women.*—22. The need for women doctors in this country cannot be over-emphasized. Except in the Province of Madras, however, women receive no special encouragement to take to the profession of medicine. Nor do the provinces have any definite rule as to the number of women to be admitted into medical colleges. In Madras women are exempted from the payment of fees at the three State Medical Institutions and l/3rd of their admissions are reserved for women. The result of the large number of women students being trained in these colleges has been that they have provided the recruiting-ground for women medical personnel for various States: and many Provinces outside Madras. We feel that having regard to the great need for women doctors particularly in Northern India, all colleges should reserve a proportion of admissions every year for women if there are suitable applicants. We realize that there is greater wastage in the case of women than in the case of men. Women students sometimes leave in the midst of their studies to marry and settle down in life, while others after qualifying, for domestic or other reasons, tend to drop out of the profession more frequently than men. While taking all these factors into consideration, we still think that it will be in the national interest if from a quarter to a third of admissions to the large proportion of medical colleges were reserved for suitably qualified women candidates. In certain cases, it may be found advisable even to increase this percentage of reservation. We would, however, lay emphasis on the cardinal principle which should apply to all entry into medical colleges and which we set out below—the principle of merit tempered, where necessary, to provide for communal representation.

(ii) *Men.*—23. The fact which faces us most prominently today is the disproportionately large number of applicants for admission compared to the number that can possibly be admitted. It is not, therefore, strange that the methods of admission should be of special interest and should have come in for considerable criticism. We have been informed that, in many cases, admission is influenced by considerations which have no connection whatever with the merits of the candidates. We need not expatiate upon the evidence that has been given to us in this connection. We would only point out that the capacity of the medical teaching institutions in the Country will continue to be limited for a considerable time to come, even after our recommendations are accepted. With the number of applicants for entry larger than the number of vacancies available, admission must inevitably assume a competitive character. It, therefore, appears essential to us that, as far as possible, the applicants best qualified to make use of the opportunities provided and most likely to fulfill the requirements of the doctor we need, should alone be taken into the colleges. In other words, merit should, so far as possible, be the test for admission. We realize that there are factors which militate against the application of this principle in its entirety. Communal considerations cannot be ignored in the present state of the country much as we may deplore the intrusion of this principle into the field with which we are dealing. We are, however, united in the suggestions we put forward in regard to the method of making admissions to medical training institutions in the,

country. We understand that the competitive or selective principle is likely to be adopted in the United Kingdom if the Good enough Committee's proposals are accepted and we have had it or. the authority of Dr. Ognev, the Soviet Representative, that selection based purely on merit, regulates entry into the medical training institutions in the Soviet Union. We feel that a satisfactory compromise between this principle and the general feeling that minorities should be given a fair chance of entry into the profession would be achieved if a plan on the following lines were adopted.

24. A percentage of admissions to every medical training institution should be by pure merit alone, whatever the test that might be adopted. This proportion may be about one-third of the total vacancies. The rest of the vacancies may be divided among the communities and in the number selected on such communal basis no account-be taken of those who secure admission on the basis of pure merit. For instance, if 80 per cent of entrants from the open examination or admission test belong to a particular minority community, that minority community should not be denied its proper proportion of the remaining vacancies. The same applies of course to a majority community. It is however essential that even in the case of the minority communities, the communal proportion should be subjected to the test of merit and the best qualified from among a particular community's candidates should be selected for admission. Favor or influence should play no part in securing entry for a candidate.

25. We do not feel justified in formulating details of the admission test. This may well be left to the Universities. We should, however, say that any test which does not provide for assessing a candidate's personality, initiative, powers of observation and independent thinking will have largely failed" in its object. A candidate's academic record should be given due weight, but character, physical fitness and athletic attainments should not be left out of account.

(g) The Cost of Medical Education

26. There is no doubt that the long course through which a student must pass before he is equipped to practice as a doctor, imposes a heavy financial burden upon those responsible for his education and in many cases the result may be to shut out the prospect of a medical career for those of limited means however suitable they may other wise be. We feel that, apart from the injustice this involves for the individual, it is not in the interests of the State that economic barriers alone should prevent those otherwise well equipped to do so from taking part in work of such value to the community. This aspect of the question now impresses itself more and more upon those responsible for medical training in other countries and the trammels of the past are being cast aside in favor of more rational thought and action. In Russia, medical education is free and, in the United Kingdom, the good enough Committee has recommended that one- third of the admissions to medical educational institutions should be free. We realize that even partially free medical education must impose a heavy financial burden on the revenues of the State, but in view of the necessity for increasing the number of doctors in the country and for ensuring the maintenance of their quality, we feel that it would be unwise in the interests of the nation not to face the

heavy bill that may be involved. We have recommended that admission to medical colleges should be regulated by a test with a view to the selection generally of the best qualified among those competing for entry, and we feel that it should be possible to evolve a system of providing the means of paying for their education, fair to the individual, advantageous to the community and not too burdensome to the State. We take into account the fact that if our recommendations are accepted, the demand for doctors for the next quarter of a century at least will be so heavy that if the State Medical Services, which we have visualized, materialize, it will be possible to absorb the entire output of the medical colleges for State service in this field. Bearing this consideration in mind, we suggest that all student entrants into medical teaching institutions should be given the guarantee that, if they complete their course satisfactorily and are otherwise suitable, they will be assured a place in the public service with specifically defined prospects. Those who do not wish to avail themselves of this offer should be left to bear their own expenses. Those, on the other hand, whether men or women, who are prepared to enter the service of the State on the satisfactory completion of their course of medical training on such terms and conditions as may be laid down, should 'be given a sufficient allowance to cover not only the cost of their medical education but also their maintenance as well. An annual provision of Rs. 1,000 per student should be sufficient for this purpose. Assuming the course of study to extend over 5 years, it will mean that each student will cost the country Rs. 5,000 it is suggested, however that this should not be an outright grant. Half, or if this is considered too little, two-thirds of this amount should be recovered from the recipient over a period of 10 years in easy installments, the balance being written off. The loan would be free of interest and the individual would have to enter into a bond to serve 'the Government for at least 10 years. Failure to carry out this condition of service satisfactorily would entail recovery of the entire amount advanced to the student. We feel that in this way, the door should be opened wide to all those who have the ability and are willing to serve the State and themselves by entering a profession which is so essential for the welfare of the nation.

27. We realize, however, the great obstacle which lack of funds is likely to interpose in the way of this recommendation being carried out. While we should like to see the subsidy paid to all entrants because of the difficulty of applying a means test, financial considerations may make this an impractical proposition to begin with. We have, therefore, made provision in our estimates for the payment of the subsidy to only about 50 per cent of the entrants. These would have to be chosen from those least capable of paying their own expenses.

A certain proportion of bad debts will be inevitable, but this is a small price to pay for the object we are endeavoring to achieve.

(h) Salaries of Teachers and Tenure of Appointment

28. To secure the right type of persons, it is of course essential that adequate salaries should be paid. As we have explained elsewhere, we are not in a position to indicate with any assurance what the scales of pay should be, but have taken certain tentative figures as the basis of our financial estimates which may call for modification

in the light of the comprehensive investigation into the general question of salaries, which we are suggesting. We would also emphasize that full-time heads of departments should be appointed to every department of study, clinical and pre clinical and that conditions of service should be such that there are reasonable facilities for research, for periodic visits to different training centers in India and abroad, and for opportunities of post-graduate teaching as well. Should our suggestion to send 200 doctors abroad with the least possible delay be accepted, we feel that within the next two or three years, a sufficient number of trained personnel will be available to supply the staff for many of the medical colleges we envisage for the country and if the system be continued, of sending abroad a certain number of Indian doctors every year till such time as the medical colleges in India are in a position to afford all the necessary facilities, there should be no difficulty in recruiting a suitable type of teacher for the medical colleges contemplated in our short-term proposals.

(i) Medical Research in relation to Medical Education

29. The organization of medical research for India will be dealt with separately but the relevant question here is how far the medical colleges should interest themselves in medical research and what place medical research should find in a teaching institution. Every college of medicine should perform the three-fold duties of (a) training under graduates, (b) training post-graduates in certain spheres of medicine, and (c) encouraging and fostering medical research in the teaching centers. We consider the last as one of its most important functions as without research in a medical teaching centre, the quickening atmosphere needed for encouraging original thinking in students and teachers, for instilling into them the need for the cultivation of the habit of enquiry and proper deduction and for stimulating observation would be lacking. It is unfortunate that, at present, medical research plays a very subordinate part in most of the medical colleges in this country. This is, however, not altogether the fault of these institutions. There has not been adequate encouragement nor have facilities for research been always sufficient, while paucity of staff has thrown much routine work on the teachers, leaving them little time or energy to devote to the task of research. At the same time, it must be confessed that research could have been done in a much larger measure if a greater amount of interest and initiative had been developed in the different medical colleges. We feel that medical research in teaching centers is so important that every encouragement should be given to this side of its activities and we recommend that the following measures should be taken for this purpose:—

(1) There should be at least one full-time member of the staff in charge of medical research who will be able to co-ordinate the different forms of medical research that may be done at a teaching centre and give advice and help where necessary.

(2) A number of young medical graduates, showing a special aptitude for this type of work, should be given scholarships for periods ranging from 3 to 5 years to pursue medical research at these institutions.

(3) Those who show special aptitude for an interest in research, should have an opening for continuing research as a life work.

(4) The different departments should have, at their head, full time Professors who have research achievements to their credit and these Heads should not be over-burdened with routine work.

(5) There should be periodic Group Conferences of the teaching staff of each institution including Surgeons and Physicians, Obstetricians and Specialists and the staffs of the departments of Pathology, Bacteriology, Pharmacology and Biochemistry. There should also be, in each medical college, a Board to stimulate medical research and to lie down and coordinate programmes and policies in regard to it.

(6) The special equipment and facilities needed for carrying on medical research should be supplied to all teaching centers.

(7) Funds for the purpose of research must be made available through a central agency.

(j) Size of Medical Colleges and of the Hospitals connected with them

30. It is ordinarily an uneconomical proposition for any college to have less than 50 students, while 100 should be considered the optimum number for admission. If our recommendations are accepted in regard to both the new colleges and the improvement of existing institutions to bring them up to the level we contemplate, it should be possible for these colleges to open their doors to a far wider number than are being admitted today. We have suggested that the optimum number should be 100. This, at the rate of 10 beds to one student would postulate a 1,000 bed hospital, which we recommend should be aimed at in connection with all medical colleges suggested by us. But we also recognize the dire need for increasing, at the outset, the number of doctors. We have also to take into account a certain amount of wastage and we would, therefore, suggest that during the initial stage, which may possibly extend for many years, the intake should be not 100 but if possible 120. When the position has eventually been stabilized in regard to the number of medical men required, then admissions may drop to the optimum considered advisable to secure the greatest attention to the needs of the medical student.

31. In referring to the hospital required to furnish the basis for a teaching centre, we would emphasize two important considerations which should be borne in mind. A teaching centre including a college and the connected hospital should preferably be in the same campus, so that a student may not be forced to waste time and energy in running from hospital to hospital and from hospital to college for the different specialties. A large general hospital with practically all the specialties in the different wings in the same campus and with a bed strength roughly of 900 to 1,000 beds is the ideal to be approached. Except for the two specialties of infectious and mental disease, the hospital should be self-sufficient in all other respects and. should be in very close proximity to the college proper.

(2) Nurses

32. The need for nurses is even greater than that for doctors. There are no more than about 7,000 nurses at present and for the implementation of our scheme, we shall need 80,400 by the end of our ten-year programme including public health nurses for outdoor duties. Here also in our opinion, a State service holding out reasonable prospects

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of a life's career is the only means of assuring the availability of trained personnel of this category where it is needed. We must emphasize that our whole plan may be gravely jeopardized or at least seriously handicapped if it is unable to command the nurses which it requires.

33. We feel that it is even more essential, in the case of nurses, to provide conditions which will attract women of the right type for this honorable profession, which occupies a position of such crucial importance in our scheme of preventive and curative health organization. We shall discuss this matter in greater detail later in this chapter.

34. A provision at the rate of at least Rs. 60 a month, to help to cover the cost of maintenance and training, should be made available for all suitable candidates. This will entail a total cost of Rs. 2,160 for the three years course of training in the case of each individual and we suggest that half of this should be treated as a loan and should eventually be recovered on the same general conditions as we have recommended in the case of doctors. We do not, however, conceal from ourselves the difficulties which, despite such assistance, will confront recruitment of adequate numbers to this branch of service, at any rate in the earlier years.

35. What we have said in regard to State service and under-training subsidies applies generally to the ephemeral class of the health visitor who will in time, we hope, be substituted by the public health nurse and also to the midwife.

MINUTES OF DISSENT

We are unable to support the conclusion of our colleagues that it would be to the greater ultimate benefit of the country if the limited resources available for the training of doctors were concentrated on the production of the most highly trained type.

Our survey has revealed a grave shortage of trained medical personnel of all types and we are deeply impressed by the necessity for making a supreme effort to increase their numbers to the maximum extent in the minimum time.

We agree with our colleagues as to the advantage of having one single type of doctor with a basic five years training in the curative and preventive aspects of medicine; but in view of the over-all shortage of doctors we feel that the early realization of this ideal must be sacrificed to the immediate needs of the country. We are aware that the organisations representing the licentiate doctors have recommended the abolition of this class, but would point out that the reasons for this recommendation are certain grievances relating to professional status and treatment.

We do not regard the licentiate as "an imperfectly" or "hastily manufactured" doctor. It is true that his training is not as complete as that of the basic doctor, but it has enabled him to render meritorious service in the past. Several distinguished medical officers have now, during our discussions, expressed the opinion that by suitable modifications in the curriculum an effective medical training can be given in 31/2 years, including a six months' internship.

Our colleagues have been strongly influenced by the recommendations of the Good enough Committee in the United Kingdom. While acknowledging the authoritative nature of that Committee's report, we must point out that it deals with a highly industrialized and developed country where conditions differ widely from those in India. In our view, the experience of the U. S. S. R., where conditions are comparable with those in India, is a more helpful guide. Remarkable progress in the provision of public health and medical relief services to the people of that vast country has been made in the last 25 years. During the greater part of that period, the training of medical personnel was undertaken on a mass scale, by utilizing unorthodox methods and accepting wide variety in the duration and standards of the courses prescribed. The result was that while in the years 1928 to 1932, the output of doctors was 42,000, during 1933—37 it had increased to 99,600; and other types of trained personnel showed similar increases. Thus, in 1938 it was possible for the authors of the Third Five Year Plan to place in the forefront of their programme, the improvement of the quality and standard of training and a steady increase in the higher grade medical schools.

This experience suggests to us that we should be prepared to use every possible means in India, including the adopt on of a shorter licentiate course, to increase, both rapidly and substantially, the production of trained medical personnel. Once the output of such personnel has sufficiently increased, then it will be possible to place greater emphasis upon the quality and length of training and to insist upon the production of basic doctors only. Such a policy would make possible the fulfillment of both the short and the long term programmes at an earlier date than is at present envisaged in this report. In fact it would speed up considerably the progress of all our schemes.

We recognize that the U. S. S. R. has a highly centralized and authoritarian government which is able not only to plan but also to execute the plan it has made. In India, on the other hand, the adoption and execution of our plans and programmes will be mainly the responsibility of Provincial Governments. We can only therefore express the hope that they will share our view that the imperative and fundamental need in India is the large-scale production of trained medical personnel of all kinds, in as short a time as possible, and that this may necessitate the toleration, for the time being, of lower standards and shorter courses of training than they would ordinarily prescribe. Such a policy will be fully justified if it results in really rapid and substantial improvement- in the health services of the country.

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VISHWANATH,
P. N. SAPRU.
N. M. JOSHI.
L.K.MAITRA.
A. H. BUTT.

II

One fifth of this planet's population is cooped up in India. One-tenth of this population lives in cities and nine tenth is dispersed over six lacks of villages. The medical service of the people, poor enough in urban areas, is deplorably deficient in rural areas. The country as a whole possesses but one tenth the number of doctors she should have if Western standards of medical service prevailed. This enormous deficiency is further aggravated, so far as the rural population is concerned, by nine tenth of the available doctors concentrating in the cities and only one tenth being left to serve the vast rural population of this subcontinent. Poor communications and economic want interfere greatly with free utilization of even this very meager personnel.

Nearly two thirds of the total number of registered medical practitioners in India is Licentiates and the rest graduates. The former have been an important indigenous feature of the growth of Western medicine in India and no section of the profession in the country. have greater service of humanity or medical science to its credit. There is no doctor of eminence from the non-licentiate group whose compeer or better could not be found in India from amongst the licentiates. They occupy through their merit and service a place in the affections of our people to which unbiased citizens from all strata of Indian society, particularly rural, would gladly bear-testimony.

The question of post-war improvements in medical education, has-been considered recently in England by the Good enough Committee. Two classes of medical practitioners, licentiates and graduates, have existed in England, as in India, for over a century. The Good enough Committee has recommended the abolition of licentiate teaching in England. This recommendation has influenced greatly several' members of our Committee. In a hurry to conform they have unfortunately ignored the fact that the good enough report describes the proposed abolition of licentiate teaching as the "final stage" of an "evolutionary development". We are of the opinion that that-final stage of evolutionary development is not one of India's achievements yet. Neither in the medical sphere nor in the more fundamental spheres of economic, social or political organization, can India claim to have attained the evolutionary development that the Good-enough Committee Report claims for England. From the point of view of medical development, India is said to stand today where England stood 100 years ago. The U.S.A 75 years ago and Russia in 1017 England was in no hurry in the last 100 years to abolish the production of licentiate doctors, why should India be coerced to take this step on the eve of momentous changes in its future?

An important feature of evolutionary development in England was progressive urbanization. Only 20 per cent of England's population was rural before this war. It is 00 per cent in India. England with her high urbanization percentage, is only contemplating giving up Licentiate production now. if Japan with 50 per cent urbanization of her population stuck to Licentiate production, if Russia with vast stretches of territory and a vast rural population has perfected rural medical relief by strengthening enormously her production of Feldshers (medical assistants), why must India abandon a well tried" and useful institution?

The following paragraphs answer arguments cited on pages 340.41 of this report:—

As for argument (a) on page 340, we must state that we consider that our licentiates, *vis-a-vis* our graduates, represent the same range of medical competence as the licentiates and graduates in England. One may, if one wishes to indulge in unnecessary comparisons, designate groups as more or "less completely trained" but after one has begun medical practice the label may soon shift. The licentiate may prove, as he not un-often does, more completely trained than the graduate.

The central fact to realize is that our requirements are so vast that there is full room for all types of medical personnel in our country.

In "a statistical study spread over 6 years in Bhopal State, it-was found that 83 per cent of the total ailments were amenable to simple treatment, if given in time, that 13 per cent needed hospital care, and that 4 per cent, required specialized treatment". This investigation suggests a range of usefulness for licentiates which must make opposition to their employment at primary and other centers a pure exhibition of prejudice.

So far as "the temptation to increase numbers by lowering the standard of teaching" is concerned, the Russian example is worth close study. There are phases in the programmes of development of backward countries, which may demand varying emphasis on the quantitative and qualitative aspects of achievements, at different times and under different conditions. Within limits standards can be made to suit dominant requirements. The contemplated "basic doctor's" training is about the same as that of a medical graduate in Russia and within 20 years that country has raised her number of graduates from 19,000 to nearly 1,40,000. Simultaneously they have produced 3.6 Feldshers for every doctor trained. We have in India 2,500 out-patient dispensaries which are mostly in charge of licentiates. Russia has 48,000 dispensaries, the independent charge of which is held by Feldshers.

As to Para (b), the practice of community and preventive aspects of medicine has a range, like other applied sciences, within which the licentiate can usefully function. The licentiate is quite competent with a small orientation course to do justice to these particular aspects and this teaching can also be fitted into his undergraduate curriculum without trouble. The community and preventive aspects of medicine are merely the applied aspects of fundamental sciences which are to a substantial extent integral part of the existing curricula of licentiate teaching. The rest of the arguments in this paragraph and in paras (c), (d) and (e) are an explanation of the dangers attending the production of more than one category of doctors. If there be any force in these prognostications, Russia— the foremost exponent of the utility of the two grades of medical personnel—should have been ruined from a health point of view. On the contrary, its perfection of public health and medical services, working for its rural and urban population and the Army, have been the envy of the whole world. She has raised the number of medical colleges, which were eleven in the Tsarist regime, to seventy-two end medical schools from sixty-five to nine hundred and eighty five.

The argument to create a classless profession to eliminate inferiority complexes looks superficial, when read in the context of the rest of the Report, the organization section of which gives ample evidence of hierarchies, insuring perpetuation of the complexes denounced.

So far as the demand on the part of the Licentiates for the abolition of their class is concerned, its genesis lay in the failure on the part of the administration in the past, to attend to their genuine grievances. Rather than remove these group has been encouraged to commit suicide.

The consequences of licentiate discontent are not to be borne by agencies concerned with the genesis or continuance of the discontent, but are to be visited on the dumb millions of the countryside, who are to be deprived of licentiate service.

A similar situation had arisen in Russia. Although Government of that country had also very nearly ordered the abolition of this class but before final orders were issued, a scientific examination of the demand was ordered. It was found that grave injury to public health and medical relief would result by the abolition of this class. Orders were consequently issued to increase the number of Feldsher Medical Schools which were gradually raised, from sixty five in 1015 to nine hundred and eighty five in 1941.

So far as the argument of the support of the two Congress Ministries to the abolition of this class is concerned, it must be stated that the step was taken first in Madras where the medical portfolio came to be held by a Licentiate Minister. The U.P. followed this lead unthinkingly, for it was the province with the poorest arrangements for rural medical relief in India and needed licentiates most. Its Governor when interviewed by members of the Health Survey and Development Committee, who toured his province, deplored the abolition of licentiate teaching in his province. Further this matter could not have been considered by the Central Organization of the Congress. Its members claim to be friends of the poor. How could they give precedence to the demand of a Trade Union like the Licentiates Association, priority over the interests of the rural masses? It is difficult to imagine, that looking about for world experience, Messrs. Gandhi, Nehru or Azad, could have ignored the positive achievements of Russia in this field.

Note must be taken of the fact that while a majority on the Health Survey and Development Committee can abolish the licentiate, they cannot prevent other practitioners, practicing a variety of systems of medicine, taking his place. This has already happened in Congress Provinces, particularly those which have banned licentiate teaching. So far as indigenous systems of repute like the Ayurvedic and Yunani are concerned, their teaching is passing on to institutions which combine elementary courses of training in basic subjects of the medical curriculum with Material Medical and Therapeutics of the indigenous systems. Sociology and economics often determine the patient doctor relationship. Under existing conditions the licentiate will be replaced mainly by Vaids and Hakims. Already hundreds of them are being employed by Government for inoculation work etc. previously done by medical men. This will raise the question of the extent to which these systems will have a claim on Government support. The virtual shelving of this question by the Health Survey

and Development Committee will be no help when the actual application of crores of public money to problems of health and medical relief takes place in the provinces and at the centre. The "basic" doctor will not willingly fit into the rural scheme, except under conditions of destitution.

Since the scheme proposed for Medical Relief and Public Health is to benefit only a section of the population (one fifth for the first three years and one half slowly in 10 years) and is supposed to absorb the entire output of all the existing Medical Colleges as well as the sublimated Medical Schools. Public Health and Medical Relief over the remaining four fifth to one half of the country, for which no medical colleges or schools will work, will atrophy. There will be no personnel like the licentiates even, to help the regions and institutions which will come under neglect. The chaos created by the end of ten years need not be considered, for the country by then would have entered the period of the long term programme, the details of which like those of other millennia, must of necessity remain nebulous.

The decisions of bodies, like the Health Survey and Development Committee, are often taken not so much on facts garnered or their evaluation, but on ideologies which dominate the minds of the members They must have the Good enough Committee findings prevail, even though there be so little common between the educational, economic, political or medical development of England and India. Russian experience and achievements must be ignored, nay rejected, even when the fate of institutions common to both Russia and India, such as medical schools for licentiates, was concerned.

Lt-General J. B, Hance and Lt-Col. D. P. McDonald published a memorandum for the consideration of our Committee in which they said "The basic problem is now to raise 260,000 doctors, 770,000 nurses. 69,000 Health Visitors and 85,000 Mid wives. For the answer we should not look to the prosperous and highly civilized communities of the United Kingdom and United States of America for our models. Our difficulties are shared by Russia and China". According to these officers there was in Russia "A realisation that they could not dispense with the Feldshers".

But the Health Survey and Development Committee decide that India must dispense with this class. They fear to emulate the Russian example.

Our specific recommendations are as follows: —

1. Keeping in view the very urgent need for doctors and more doctors we are strongly of opinion that the production of Licentiates should continue till the increased number of Medical Colleges has produced "basic" doctors in the proportion of at least 1 to 1,500 of the population. Until 'such time, provinces must not be coerced into closing the existing medical schools.

2. That the existing course of medical studies for licentiates should be considered as closely from the point of view of economics in and reinforcements of the curriculum, as already done by the Committee m respect of University courses of medical education. In our opinion this consideration can help to reduce the licentiate course from 4 to 3 years plus a period of internship for six months.

8. The number of students obtaining the F.Sc. Medical qualification in India is so great that this qualification could be demanded as basic for purposes of admission to the Licentiate course. This will facilitate the acquisition, later of the University qualifications by Licentiates who so desire.

4. The licentiate course can be oriented for purposes of Public Health bias along same lines as recommended by the Committee for the courses of instruction for medical graduates.

5. The decisions taken by the Medical Council of India, enabling Licentiates to acquire medical qualifications of the University standard, during the pendency of the war and for three years after should be further liberalized and made permanent. Provision should also be made for the admission to Medical Colleges of all Licentiates who wish to attend supplementary courses of instruction to obtain medical degrees. The cruel slogan "once a licentiate always a licentiate" must be killed, but with it not the Licentiate whose services to this country have been, and may yet be for a considerable time, of inestimable value

VISHWA NATH.
A. H. BUTT.

III

We strongly feel that admissions to medical schools should be stopped forthwith and efforts should be made to upgrade such of the medical schools as could be turned into colleges. The improvements in the existing colleges could be undertaken afterwards.

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B. PROPOSALS IN RESPECT OF THE EDUCATION OF HEALTH PERSONNEL

(i) MEDICAL EDUCATION

Undergraduate Education

1. There is a great need for a reorganization of the standards of professional training in order to provide the types of workers who will be fully equipped for participation in a modern health programme with its newer and expanding conception of service to the community. From a study of modern trends it became evident to us that what was really required was a reorientation of outlook. Whereas, up to the present, there has been a division of medical duties into (a) preventive and (b) curative, the need of the future is quite definitely for a type of doctor who will combine both of these functions in his own person—a "basic" doctor. It must be borne in mind that these remarks apply mainly to the type of relief which will be given in the primary units. In the institutions at the secondary health centers and district headquarters, there will be a separation for specialization, but again at the highest administrative level, there will be a fresh fusion into a Director, whose sphere of duty will cover both the preventive and curative fields.

2. The conception of a "basic" doctor is not new. Some ten years ago Dr. Etienne Burnet of the Pasteur Institute prepared for the League of Nations a Review of Medical Education and the Reform of Medical Studies. In the course of that review he asked the question "What type of doctor do we wish to produce?" In his answer he quoted from Professor Hernado of Madrid "We do not think that the family doctor is disappearing or that he should disappear. He will be a preventive medicine hygienist; he will be a vaccinator, the detector of diseases at their outset, the supervisor of convalescents and germ carriers, the agent of systematic examinations. He will require a culture and a skill superior to that demanded of him now". Medicine, Dr. Burnet said, having only too much to do in this field has for a long time past concentrated on the art of curing disease. It is time for it to devote its chief attention to the art of preserving, or even of creating, health. This will not be a sudden revolution. The creators of rational medicine realize that health has priority over sickness and should be studied for its own sake. Hygiene has always existed in embryo side by side with medicine. From Sir Arthur Newsholme he drew the following contribution— "The first desideratum for the doctor who wishes to enter into the world of new medicine is a full acquaintance with the normal and a complete knowledge of means for its maintenance." Dr. Burnet, supporting himself further by so eminent an authority as Sir George Newman, gave emphasis to the principle that the idea of preventive medicine should permeate the whole of medical education. The reason why preventive medicine has not, up to the present, become inter-related with clinical studies is that it has been taught largely by public health officials. If the practitioner is to practice preventive medicine he must be taught that subject by his clinical professors. Preventive medicine leads easily to social medicine, and it is as exponents of the principles of social medicine that we would wish the "basic" doctor to go forth into the world of medicine.

3. Considerable thought has been given by us to the type of training necessary for the evolution of this "basic" doctor, and advice was sought from a strong and representative advisory panel of experts before setting out the recommendations which will be found detailed at some length in Appendix 28.

4. The main ideas underlying the changes recommended, in the undergraduate curriculum are as follows:—

(1) Emphasis in undergraduate teaching will be on the inclusion of principles and methods which would enable the student to learn for himself, think, observe and draw conclusions.

(2) Throughout his career the student will be made to realize that general science and medicine have many points of contact and that they are both continually progressing.

(3) Every effort will be made to exemplify this principle by the inclusion of clinical teaching in the pre clinical period, given by a clinician who will bring living reality into what often tends to be a dead and purposeless study. Similarly the teaching of pre clinical subjects will not end with the passing of examinations, but will-extend into and throughout the clinical years by regular courses given not informally by clinicians, but by the regular teachers in the preclinical subjects.

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(4) In the teaching of anatomy the number of didactic lectures should be radically curtailed and the number of lecture-demonstrations should be increased, with smaller classes than is usual at present. In the teaching of physiology, the syllabus should be similarly revised.

(5) Throughout the recommendations, reduction in the size of classes as compared with the present and increase in the number of teachers is stressed. The proportion of instructors to students is a matter of considerable importance. In pre clinical subjects the ratio of instructors to students should be approximately 1: 15. In the U. S. A., this proportion ranges from 1:2 to 1:12, with an average of 1: 4. It is most important also that mechanical equipment such as microscopes, haemoglobinometers etc. should be adequate.

(6) Towards the latter half of the pre clinical studies a course of lectures in elementary psychology and elementary pharmacology should be introduced as well as an introduction to the study of pathology.

(7) At the beginning of the clinical period, a short course of instruction should be given in the methods of clinical diagnosis and laboratory technique, the elements of nursing and dietetics, and an introduction to the subject of social medicine.

(8) In the clinical subjects, which will be taught mainly by whole- time teachers, every effort should be made by means of regular conferences, at which the various teachers should be present, to show he students that medicine, surgery and pathology are not separate subjects in isolated compartments, but that all form parts of one whole.

(9) In clinical work in the wards every effort should be made to give as much personal attention to the students as possible. The number of beds in a unit should be at least 40 and 8 or 10 students should be attached to each unit. The proportion preferably of junior teachers to students should be 1: 8 and of senior teachers 1: 10.

(10) In the teaching of pathology, which should be revised and extended so as to include more definite instruction in Microbiology and Parasitological, great importance should be attached to post-mortem work. The physician and the surgeon concerned should attend the post-mortem with the students and participate with the pathologist in the discussion on the post-mortem findings. If necessary, State legislation should be introduced to make an autopsy obligatory, if it is considered necessary by the medical staff.

(11) In every teaching institution a department of Preventive and Social Medicine should be organized on the lines set out in Appendix 29 with facilities for both teaching and field work. In the mean-time the preventive aspect of medicine should be stressed in the teaching of every subject throughout the clinical course, and the student given an insight into Social Medicine by contacts with home and community life. A hospital social service should be established as soon as trained personnel become available.

(12) We do not wish to attempt to impose upon the country a stereotyped curriculum so long as the fundamental details of our recommendations are observed. We consider that a wide margin should be allowed to individual medical colleges and universities to

develop their own potentialities, and even to experiment, provided that the obligation to conform to certain known minimum standards is met. We hold that reforms and improvements are more likely to be brought about in that way, for where reforms have to await agreement among a large number of institutions, the result is usually delay in progress.

(13) It is considered essential that, after the final qualifying examination at the end of the fourth year, there should be for every student one year's "internship", during which time he should work under supervision and not be given the full rights of a practitioner. There should be sufficient latitude given to the authorities concerning the manner in which this year should be spent, but it is essential that in every case, three months should be devoted to work in a public health unit.

(14) Throughout the whole period of the course the importance of research should be stressed. The whole-time teachers will themselves be expected to engage in research in their subject and will also be required to encourage any student who shows any aptitude of leaning towards this most important aspect of his work.

5. *Annual entry of medical students.*—With a view to obtaining a standardized medical education our fundamental recommendation for the short-term scheme is that existing medical schools shall be gradually closed down as schools, and, so far as possible, be converted into colleges, while existing medical colleges shall be improved and expanded so as to take in a larger number of students annually.

6. At the present time an average of 1,200 students are admitted each year into the various medical colleges while the medical schools absorb a further 1,000 to 1,200. The total number of students at present catered for is, therefore in the region of 2,400. We feel that if effective steps are taken, the annual entry into the 16 medical colleges existing at present can be increased from 1,200 to at least 1,920. We would, however, emphasize that such increase should be given effect to only when radical alterations have been made in the laboratories, lecture halls and hostels, and adequate provision made for the teaching of personnel required for each institution. In spite of the fact that most of the medical colleges are understaffed and that their Departments will have to undergo radical changes, we believe that as a first step it should be possible, with sufficient financial aid, for changes to be made simultaneously both as regards increased efficiency and also as regards extending the scope of work so as to permit an increase in the number of students admitted.

7. As a guide to the authorities concerned in the organization of Medical Colleges on the lines recommended by us we give in Appendix 30 certain recommendations regarding estimates of staff put forward by the Good enough Committee.

8. *The planning of teaching centers.*—It has to be borne in mind that some provinces are in a much better position than others to open new medical colleges. In the establishment of new medical colleges, therefore, it seems necessary to bear in mind the requirements of the latter provinces and to concert measures whereby a certain proportion of seats may be reserved for candidates from such

areas with a view to spreading out medical education and making it available equally to the whole of India. This can be facilitated by the Central Government taking a share both in the establishment of new medical colleges and also in the financial responsibility for their efficient maintenance.

Detailed Recommendations regarding Teaching Institutions for the Training of Undergraduates

9. (a) *Improvements in existing colleges.*—It has been pointed out in the survey section of this report that grave defects exist in most of the existing medical colleges and we recommend that every effort should be made to bring those colleges up to the standards which are defined under the heading "The Requirements of a Medical College" in the Memorandum contained in Appendix 28.

As has already been noted, that memorandum is integral to any large scale adoption of these proposals, and its recommendations are of uniform application. In particular, we would like to draw attention to the fact that considerable improvements are needed in the Agra Medical College, in the Balak Ram Medical College at Lahore, in the recently opened Medical College at Cuttack, and in the Amritsar Medical College opened by the Punjab Government, before they can be considered as satisfying the requirements of a Medical College. The Stanley Medical College, Madras, and the Missionary Medical College at Vellore also require extensive improvements. In the Stanley Medical College, immediate steps should be taken to provide for the Departments of Anatomy, Physiology and Biochemistry within the College proper to remodel thoroughly the lying-in-hospital and the out-patients department of the Stanley Medical Hospital and to improve the facilities available in its special departments. The Vellore Medical College authorities, it is understood, are launching a large scheme of radical reconstruction with the intention of making the college a co-education mission institution to admit a hundred students every year. There is another school, the Arya Medical School at Ludhiana. We consider it desirable that there should be a medical college for this area of the Punjab and suggest the conversion of the latter medical school into a college. Some of the Departments of the Calcutta Medical College and the Carmichael Medical College stand in need of improvements and reference has been made to this in the reports of the Inspectors of the Indian Medical Council. The Madras Medical College, which affords extensive facilities In many branches of study, suffers unfortunately from the fact that the associated hospitals are too spread out, with the result that the time of the students is wasted in journeying to the Maternity Hospital and the Ophthalmic Hospital about two miles away, the Tuberculosis Hospital which is at an equal distance the Infectious Diseases Hospital and the Mental Hospital which are both five miles distant from the General Hospital.

10. This is a convenient place in which to draw attention again to the desirability of having all the special departments as far as possible situated in the same campus as the General Hospital. For obvious reasons, this will at present not be possible in most of those Medical Colleges which are already in existence, but we believe the principle to be sound and urge that it should be borne in mind in the construction of new medical colleges.

11. We advise that the maximum yearly admissions should be normally 100, although, during the short-term programme, it is suggested that admissions might be raised to 120 in order to help in the production of as many qualified medical men as possible. This would, however, be a temporary expedient. It must be realized that any number in excess of 100 may lead to a loss of personal attention to individual students and to overcrowding in laboratories etc.

12. In practically every teaching hospital, considerable additions are essential both in equipment and additional accommodation for patients, while an increase in the number of teaching staff and the appointment of whole-time teachers, and of a large number of trained sisters, nurses and technicians and of an adequate secretarial staff are all urgently required. Quarters for the house staff, for the nursing staff and the resident students will have to be built in most of the teaching centers.

13. (b) *Conversion of existing Medical Schools into Colleges.*— We are of opinion that given sufficient funds, it should not be difficult to convert the following medical schools into colleges: —

1. The Poona Medical School.
2. The Ahmedabad Medical School.
3. The Darbhanga Medical School.
4. The Campbell Medical School.
5. The Calcutta Medical School.
6. The National Medical School.
7. The Dacca Medical School.
8. The Jalpaiguri Medical School.
9. The Nagpur Medical School.
10. The Medical School, Bangalore (Mysore).
11. The Indore Medical School for Central India and Rajputana States.
12. The Arya Medical School, Ludhiana.

14. (c) *Establishment of new Medical Colleges.*—For obvious reasons, namely population, wealth and progress there are considerable variations in the ability of different provinces to establish new medical colleges. We have, in considering this question, borne these matters in mind and also the fact that provision may have to be made for students from outside a province. The suggestions which we now advance must not be considered as in any way final. They are the best that, with the information at our disposal, we 'are able to put forward.

15. It is now proposed to consider the Provinces and States separately.

(1) *Madras.*—there are at present four Medical Colleges in Madras, and no schools remain to be converted. This province should within the next 10 years be in a position to establish colleges at Madura, Coimbatore. Guntur Cocanada and Calicut. A distribution such as this will spread the new facilities over the province, and will run parallel to the long-term policy which is envisaged for medical relief there. We would like the question of a college in the Ceded

Districts to be considered, either supplementary to or in place of one of the colleges suggested above It is felt that at least two of the colleges, each admitting 100 students, can be started immediately, and that the other three can be planned within the next five years.

(2) *Bombay.*—Bombay has at present two medical colleges, and the conversion of the schools at Poona and Ahmadabad will bring the number to four. Bombay city affords abundant clinical material justifying the establishment of more colleges, and we propose that at least two more should be provided at an early date. We suggest *one* more college for the southern part of the province.

(3) *The Central Provinces.*—The conversion of the school at Nagpur into a college is a matter of urgency. We consider that the existing buildings will not be suitable and that an entirely new college and hospital should be constructed either within the area or the existing buildings, or in an area which may be defined by the Improvement Trust. An area of between 50 to 100 acres should be insisted on. It is suggested that, when these recommendations have been given effect to, a college should be established at Jubbulpore.

(4) *Orissa.*—The school at Cuttack has recently been converted into a college, but in order to come into line with the others, radical alterations and improvements will be required. It is not possible for this province to consider the establishment of any other college.

(5) *Bengal.*—The clinical material in Calcutta is unquestionably the richest in the whole of the East and, at present, the strength of 4,000 beds for a population of nearly 21/2 millions is totally inadequate for a centre of such importance. There should be a bed ratio of 6 to 8 per thousand of population instead of the existing ratio 1 to 600.

The Campbell Medical School is inadequate as a training centre according to modern standards and we consider that nothing short of the demolition of a large part of the School and the entire remodeling of the Hospital will enable this institution to be converted into a medical college suitable for the intake of a hundred students per year.

The National Medical School which is a private organization is situated in an area where there is great need for medical facilities. We suggest, therefore, that the extensive area around this School should be acquired and the School converted into a College at an early date.

The above improvements will add two colleges to the two already existing, and *it* is proposed that, in addition, the erection of two entirely new colleges should be undertaken within the next five years. In that way at the end of 10 years, there should be facilities for the training in Calcutta of 600 students per year.

In addition to those metropolitan colleges, we recommend that in the province of Bengal, colleges should be established at Dacca, Burdwan and Jalpaiguri.

(6) *Bihar.*—The existing college at Patna should be improved and extended so as to take in 100 students. The Medical School at Darbhanga should be converted into a College.

(7) *United Provinces.*—The two existing medical colleges at Lucknow and Agra require improvements and extension so as to

take in the full number of students. We propose that, during the short-term programme, colleges should be established at Allahabad, Cawnpore, Benares and Aligarh. The Hindu and Muslim Universities at the last two places serve an all-India purpose and attract students of the respective communities from all parts of the country. Medical colleges established in these two places can therefore serve the needs of India as a whole and it is for this reason that we would welcome the establishment of medical colleges fulfilling the requisite standards of efficiency at these universities.

(8) *The Punjab.*—We advise that activities in this province should be concentrated on improving colleges which have already been opened. Lahore, Amritsar and Balakram colleges all need remodeling and extension. The possibility of opening one more college in this province can be considered after these three colleges have been strengthened so as to receive the maximum number of students. We have already recommended that the Arya Medical School at Ludhiana should be converted into a college.

(9) *Bind.*—We recommend the closing of the school at Hyderabad and the opening of a new college at Karachi.

(10) *Assam and the North-West Frontier Province.*—We hope that it may be possible for these two provinces to establish medical colleges at an early date. Until this is done our recommendation is that some of the colleges proposed for the neighboring provinces should, for the present, give facilities for students from these two provinces who desire training in medicine.

(11) *Delhi.*—The Lady Hardinge Medical College, Delhi, is the only institution in India offering medical education exclusively for women.

(12) *Ajmer.*—We consider the establishment of a new college at Ajmer of the utmost importance. The whole of the Rajputana area has no facilities for medical education. We recommend that a certain proportion of the seats in the proposed medical college should be earmarked for students from the different Rajputana States and that the latter should be asked to contribute towards the capital and recurring expenses of the college.

(13) *Indian States.*—We have no desire to do more than offer helpful suggestions in this as in other matters germane to the health of the people, for the consideration of the Indian States. We feel that infinitely more valuable results can be achieved by co-operation between Governments than can possibly follow from isolated independent effort and hope that the ideas which we set out here and else where in this report may be found of some use by those in the Indian States with whom rests the responsibility for action in the field of health.

We have stressed the prime necessity for the maintenance of the standards of medical education at a high level and subject always to this basic requirement, we feel that the States have it in their power to extend facilities for sound medical education to a very material extent. It may be that a number of States may feel it advisable to join together to bring institutions adequately equipped and administered for this purpose into being to serve their needs. Others may find it more suitable to make arrangements with a

neighboring Provincial Government for such a purpose. We feel however, that there is a number of individual States whose resources, high standards of administration and interest in the well-being of their peoples eminently fit them to make a very effective contribution to the solution of what is really an all-India problem by having their own medical teaching institutions. For it must be borne in mind that the doctor and other medical personnel required by the States, if these cannot be supplied by the States themselves, may eventually have to be drawn from the limited numbers available in British India which must, therefore, be vitally affected. We feel that, provided standards are maintained at the level which we visualize, a number of new medical institutions could, with advantage to all, be brought into being in the States, while existing institutions could be brought up-to-date and enlarged. The Medical School at Indore if raised to the status of a College would prove of invaluable service to Central India. Mysore could enlarge the college at Mysore and bring another into being at Bangalore. With its resources, it could ensure that both are up-to-date and in accordance with the highest modern requirements, while Hyderabad could certainly enlarge its existing college to take in 120 students annually while making it, through proper equipment and staff, second to none in India.

16. If all the above colleges work at their full strength the total annual intake of students would be between 4,500, and 5,000. This is the objective which we wish to be kept in view for the short- term policy. We are not able to give concrete long-term proposals and feel that rather than build upon an insecure foundation, we prefer to advise a review of the position at the end of five or seven years, by which time there should be more information available for facilitating planning on a sounder basis.

Postgraduate Education

17. Except for the institution of courses of instruction leading to the degrees of M.D., and M.S., few of the universities have, until recently, evolved any extensive scheme for the improvement of postgraduate medical education. Within the last year or two, how ever, there has been a move by certain universities towards the establishment of diplomas in special subjects as well as higher degrees in medicine. But this step, while admirable in itself, does not attack the problem of postgraduate training at its roots. It may tend towards the sterile acquirement of degrees and diplomas as a sort of personal adornment, often without either the intention or the ability on the part of the recipient to specialize. There should be a clear understanding by the profession, and also by the public that, for recognition as a fully qualified specialist, four or five years should have been spent in the study of the specialty in a large teaching centre, where facilities are available not only for instruction and the acquisition of knowledge, but also for the conduct of research.

18. Postgraduate education should be devised to meet two different needs, each important in itself but not connected with each other. They are:

(a) The training of consultants and specialists.

(b) The training of practitioners desirous of practicing a specialty, without the definite status of specialists.

In the case of such training will naturally involve several years of work in special departments or hospitals under the guidance of a consultant or a specialist. The training may extend up to five years and lead to a higher qualification, such as M.D. or M.S.

In the case of (b) the training will be in the specialty for a period ranging from 12 months to 18 months under suitable guidance.

Courses should be available in:

(i) Oto-Rhino-Laryngology.
(ii) Dermatology.
(iii) Radiology, diagnostic and therapeutic.
(iv) Ophthalmology.
(v) Obstetrics and gynecology.
(vi) Venereology.
(vii) Anesthesia.
(viii) Psychiatry.
(ix) Pediatrics.
(x) Tuberculosis.
(xi) Malariology.
(xii) Blood transfusion and resuscitation.
(xiii) Orthopedics.

At the end of the course, the candidate should be eligible for a diploma in the specialty. Before he engages in study for the higher degree or diploma it should be a pre requisite that the candidate should have completed his internship for one year which all persons will, under our proposals, be required to undergo after passing the qualifying examination. Resident appointments in the specialties should be available to graduates only after they have completed this period of internship.

19. *The technical and administrative control of postgraduate medical education.*—We have given considerable thought to the question of 'developing facilities for postgraduate teaching and research in different parts of the country. In the chapter dealing with the All-India Medical Institute it has been suggested that this institution should provide postgraduate training of a high order in a large number of subjects in medical and certain allied sciences. At the same time it will be necessary to supplement these facilities by the development of existing or new institutions at suitable places in the provinces and to make them centers for training on an all-India basis. These will fall under two heads, namely, (1) special institutes for particular diseases such as leprosy and (2) provincial centers where existing facilities in certain branches of medicine can be extended in order to make them available not only to the province concerned but also to other parts of the country.

20. We think it undesirable that every centre of medical education in India should attempt to give courses of advanced training in a large number of subjects. We feel that it would be more in the interest of real specialization if universities were to offer advanced courses only in those subjects for which they have particularly good facilities. Clinical material varies in nature in the different provinces in India and it is evident that where material is abundant for the

study of a special disease, a centre should be established there, aiming at a high level of instruction in that subject.

We have in view the possibility of such large postgraduate-centers being instituted in Midwifery and Ophthalmology in Madras, in Ophthalmology and Tropical Medicine in Calcutta, in Pathology and Bacteriology and possibly Midwifery in Bombay. The Tata Memorial Cancer Hospital would undoubtedly be a rich treasure-house for postgraduate training in the Pathology of malignant diseases in addition to General Pathology.

21. We recommend that, as all these institutions will serve the needs of the country as a whole, the Central Government should contribute a share towards the cost of developing and maintaining them. The province concerned and the other provinces, which will be benefited by the training facilities that are offered, should also bear their respective shares of the financial burden. The question of apportioning the cost will be discussed later. In the meantime it will be recognized that, when facilities for postgraduate education are to be developed on such a basis of co-operation between the Central and Provincial Governments, questions relating to the administration and technical aspects of the control of education will have to be considered with care. We shall deal first with the technical aspect.

22. *The technical aspect.*—We consider it essential that a high standard of postgraduate teaching and research should be developed in these institutions. In this connection it may not be out of place to mention that the Good enough Committee has stated that the position in regard to postgraduate diplomas in the United Kingdom, excluding the fellowship and membership diplomas of the Royal Medical Colleges, is unsatisfactory, that a considerable variation in standard exists in respect of qualifications in the same subject and that many of the diplomas have encouraged "ill-grounded and immature specialization". In these circumstances that Committee has recommended that the award of all postgraduate medical diplomas, with certain exceptions, should be undertaken by the Royal, Medical Colleges. We are particularly anxious to avoid the development, in India, of such conditions as have been pointed out by the Good enough Committee in respect of postgraduate diplomas in Great Britain and we therefore suggest the creation of a special organization for advising the Central and Provincial Governments on the control of the postgraduate medical training centers we have proposed. This body may be designated "The Central Committee for Postgraduate Medical Education". We shall deal with the composition of this organization later. . Before doing so we shall first state our reasons for recommending the creation of a special body for the purpose.

23. It may be asked why the function of supervising postgraduate education should not be entrusted to the Indian Medical Council which has been created "in order to establish a uniform minimum standard of higher qualifications in medicine for all provinces". At present the Indian Medical Council exercises supervision over the universities granting certain medical qualifications given in the first Schedule of the Indian Medical Council Act, which consist of the university degrees which qualify for practice as medical men and' for certain higher qualifications in medicine, surgery and obstetrics.

The Act provides for the addition of other qualifications to the First Schedule so that the inclusion of the new postgraduate diplomas that may come into existence presents no difficulty. We, however, doubt the wisdom of adding these new functions to the existing duties of the Indian Medical Council. Under our programme of expansion of undergraduate medical education the number of medical colleges requiring supervision by the Indian Medical Council will increase considerably. We therefore consider it wiser to limit its functions to those already entrusted to it by the Act than to enlarge them so as to include the various new types of diplomas that will come into being through the expansion of postgraduate education. Its present functions include supervision over such qualifications as the Masterships of Medicine, Surgery and Obstetrics.

24. The Good enough Committee has suggested, for the United Kingdom, the transference of control over postgraduate diplomas, with certain exceptions, to the Royal Medical Colleges. In that country the supervision of undergraduate medical training is vested in the General Council of Medical Education and Registration. The latter was established by the Medical Act, 1858, of that country for the purpose of enabling persons requiring medical aid "to distinguish qualified from unqualified practitioners" and its powers of supervision of medical education are limited to undergraduate teaching and to the examinations which qualify for admission to the Medical Register, whether these be conducted by universities or other licensing bodies. Supervision of postgraduate teaching does not appear to come within the range of functions of the General Medical Council in Great Britain.

25. The position of the Indian Medical Council is somewhat different. It has not been authorized by law to maintain an All-India Medical Register or to exercise supervision over the various types of basic medical qualifications that exist in the provinces for obtaining entry into the Provincial Medical Registers. These are at present responsibilities entrusted to Provincial Medical Councils and Faculties. The supervision of the Indian Medical Council is restricted to certain medical qualifications which are granted by Indian Universities and which are incorporated in the First Schedule of the Indian Medical Council Act. We consider the present position unsatisfactory and have discussed the matter in detail in another section of this report. Without going into that discussion here it may be stated that, in view of our recommendation for only one basic qualification through out India for entry into the profession, we have recommended that the Indian Medical Council should maintain an All-India Register and that it should supervise undergraduate medical education, which will be confined to institutions affiliated to Universities, through out the country. In this way its functions will approximate closely to those of the General Council of Medical Education and Registration of the United Kingdom. In view of the large expansion of undergraduate medical education we have recommended, we anticipate that the Indian Medical Council will find itself fully occupied with the task of ensuring that our suggestions for the improvement of undergraduate teaching and for its reorientation in certain directions are carried into effect throughout the country. In these circumstances we consider that there is considerable justification for the creation of a separate body for supervising postgraduate medical

education. As will be seen presently from the constitution that we are recommending for the proposed Central Committee, we are providing for two representatives of the Indian Medical Council on this body.

26. The question may be asked as to whether this proposed transference of power, to the Central Committee for Postgraduate Medical Education, for laying down standards in respect of postgraduate training in particular subjects, will not constitute an interference with the right of the universities to prescribe such standards in their own territories. In this connection it must be remembered that, in the field of undergraduate education, the powers of these universities have already been circumscribed by the right of the Indian Medical Council to regulate and control such education. We consider that, in the field of postgraduate education also, there should be some central authority for ensuring uniform standards of training. In attempting to secure such uniform standards some of us apprehend that, if minimum standards are prescribed, there may be a tendency to regard these as maximum standards and that such a tendency will not be conducive to the development of the highest type of postgraduate education. Due care will have to be taken to avoid such a possibility. We do not envisage that the functions of the Central Committee for Postgraduate Education will extend over the whole field of subjects in which postgraduate training can be given. We recommend that the Committee should concern itself, at least in the beginning, only with those subjects in which it is desired that facilities for postgraduate training, when provided in a provincial centre, should serve the purposes not only of that province but also those of one or more other provinces. There are no doubt many types of postgraduate training for which facilities exist in all parts of the country and we see no reason why the right of determining standards in respect of such subjects should not continue to be vested in the universities. We suggest that, in order to assist the universities in the organization of such postgraduate teaching, a Postgraduate Council of Medical Education may be established in each university, on which should be represented members of the medical profession who are on the Faculty or Board of Studies in Medicine, a representative of the Provincial Government concerned and a representative of approved medical societies in the province. This Council will be responsible for regulating postgraduate education in the wide field that falls outside the suggested jurisdiction of the Central Committee for Postgraduate Education and will perform, among others, such functions as determining the subjects in which training should be given, arranging the courses, prescribing the syllabus from time to time and fixing the honoraria to be paid to lecturers.

27. *The administrative aspect.*—We envisage for the Central Committee for Postgraduate Education not only the function of technical supervision over postgraduate training in the institutions proposed to be established but also certain advisory functions in relation to their organization and administration. These functions will include, in respect of both categories of institutions, namely, (1) institutes for special diseases and (2) existing provincial institutions which will be developed to serve as All-India training centers, the advising of the Central and Provincial Governments on the lines on which such institutions should be developed and the apportionment of cost, capital and recurring, between the different Governments. In the

case of institutes for special diseases; which may have to be started afresh, the Central Committee for Postgraduate Education will also be responsible for recommending the sites at which these should be established.

23. A decision regarding administrative control will be determined, to a large extent, by such matters as (1) the party or parties contributing to the expenditure involved in the maintenance of the institution concerned and (2) the authority that used to be responsible for its administration, if the institution be one which had existed previously and had been improved and enlarged to serve training functions on an all-India scale. It seems therefore advantageous to consider the institutions under the two categories separately.

29. (i) The institutions under category (1) above are for special diseases. As has already been pointed out, many of them will have to be established afresh or, even if certain existing facilities are utilized, the expenditure involved may be so considerable as to make the gain from the utilization of these facilities inappreciable. In suggesting an apportionment of the cost it must be remembered that these institutions will provide postgraduate training facilities for all provinces. Even so, the services developed in connection with each of these institutions will serve the people of the local area in the province concerned, so that it seems correct to say that, on the whole, the latter benefits to a larger extent than the remaining provinces. As against this may be set the close co-operation and help that the provincial health administration will have to provide in order to enable the institution to function properly, particularly from the point of view of facilities for field training and research. In these circumstances it is recommended that the Central Government should bear 50 per cent of the cost, non-recurring and recurring, and that the remaining 50 per cent be distributed equally among the provinces. It is anticipated that it is during the short-term programme of rapid expansion of our health organization that the need for financial help from the Centre to the Provinces will be the greatest. It is therefore suggested that, at the end of the first ten years, the question of redistributing the burden of expenditure may be taken up and that a reapportionment of cost may be made.

It is desirable that the administration of these institutions, including the appointment and control of the staff, should be vested in the Central Government. In the case of institutions under this category with no previous history of administration by the provincial authority, there seems to be no special reason for transferring control to that authority. However, certain suggestions will be made later to ensure co-operation between the institutions and the provincial authorities concerned.

30. (ii) Institutions under category (2) form a class apart from those already discussed. There will be organisations already in existence and financed and controlled by the Provincial Government concerned. An improvement and expansion of their activities are being suggested in order to enable them to provide training facilities of the requisite standard for the country as a whole. In these circumstances it seems reasonable to suggest that, so far as recurring expenditure is concerned, the Province need contribute only the average annual amount it had been spending for the past three years. Of the additional expenditure that will be required for the maintenance of the institution, it is suggested that the Centre may

contribute 50 per cent and that the Provinces, excepting the one in which the institution is situated, may share equally the remaining 50 per cent. As regards capital cost the Centre may contribute 50 per cent and in the distribution of the remaining 50 per cent., the Province in which the institution is situated should also bear an equal share with each of the other provinces.

These proposals should be subject to revision at the end of the first ten years.

As regards administrative control, it seems reasonable to suggest that the Provincial Government, which had so long been in charge and had, on its own initiative, developed (he existing facilities, should continue to be in charge.

31. We have already pointed out the need for the closest possible co-operation between the Provincial Health Department and the postgraduate training centers under both categories, if the latter are to function properly. Some provinces may contain two or three or more such centers of training. We therefore suggest the establishment of a small Committee with the Provincial Director of Health Service as the Chairman and with the Directors of the Institutes in the province and the three Provincial Deputy Directors in charge of Professional Education and Research, of Medical Relief and of Public Health as members. All local difficulties in respect of individual institutes can be quickly resolved through the consultations that such a Committee will provide, while the Central Committee for Post-graduate Education will probably find that the Provincial Committee can be of great value in helping to raise the standards of training in these institutions.

The composition of the Central Committee for Postgraduate Medical Education

32. It is suggested that the composition of the Committee may be shown below: —

The Director-General, Health Services (Chairman) or in his absence, his Deputy who deals with professional education and research.	1
A representative from the Medical Faculty of each of three Universities in British India in rotation	3
Two representatives of the Scientific Advisory Board for Medical Research, which has been recommended elsewhere in the report for the organization and control of medical research in India It is desirable that one of them should be a distinguished scientist who is not a medical man.	2
Two representatives of the Medical Council of India	2
Five Provincial Directors of Health Services, or in their absence their Deputies in charge of professional education and research, in rotation	5
Two representatives for all the postgraduate training institutions under category (1) described in this chapter	2
Two representatives for all the postgraduate provincial centres under category (2) described in this chapter	2
Two Directors of Provincial Research Institutes	2

The Committee should have a full-time Secretary.

The Committee will have strength of 19 members, including the Chairman. It is suggested that the tenure of office, except in the case of those who hold their seat in their official capacity, may be fixed at three years.

33. The creation of an Executive Committee consisting of about five to seven members, the Chairman of the main Committee being. also the Chairman of the Executive Committee, is recommended. Lb is also suggested that the main Committee should divide itself into. Advisory Committees for dealing with different subjects with power to co-opt outsiders as members when discussing particular problems.

34. *Recruitment and control of the staff of the institutions under-categories* (1) *and* (2).—We have already recommended that institutions under category (1) should be under the control of the Central Government and those under category (2) under the control of the Governments of the provinces in which they are situated. The general principles, which should guide recruitment in both cases, are in our view the same. We therefore make the following recommendations, which are based on the procedure we suggested in the chapter dealing with the organization and inter-relationships of the central provincial and local health administrations (Chapter XVII): —

(1) Recruitment to these posts should be solely on considerations of merit.

(2) The venue of recruitment should be India and recruitment should be made through the Federal Public Service Commission or Provincial Public Service Commission as the case may be.

(3) It is essential that the best persons available should be secured. In respect of individual posts a search should be made through the country in order to investigate the possibility of securing suitable persons of the required caliber. It is only when this is not found to be possible that recruitment through the world market should be resorted to. The experts who are obtained from abroad should be entertained on short-term contracts, normally extending from three to five years.

(4) The condition should be laid down in every case that, with-in the period of the contract, a suitable Indian should be trained for taking on the duties at the end of the term.

(5) The selection of suitable persons from the world market should also be done by the Federal Public Service Commission or the Provincial Public Service Commission as the case may be, with the aid of such *ad hoc* committees as may be formed in the respective countries in order to assist the Commission.

(6) There should be no reservation of any of the posts for the members of any services. The sole criterion of selection should be merit and reservation of posts is incompatible with this principle.

35. *Salaries.*—We have already discussed the question of salaries in the chapter referred to above. Here again we adhere to the principles we enunciated.

As regards persons recruited from abroad, the salaries offered will have to be such as will be necessary to secure the class of persons required. They will, of course, fall outside the regular medical services of the country and, as has already been pointed out, should be regulated by short-term contracts.

For Indians the problem of recommending suitable scales of pay is by no means easy. We have discussed the different aspects of the

problem in that chapter and do not propose to traverse the same ground again. We have suggested the appointment of an *ad hoc* committee by the Government of India for an examination of this complex and important problem, in order that suitable recommendations may be made available to the Central and Provincial Governments on which they can base reasonable scales of salary for the different categories of their employees.

36. *Legislation.*—the proposals made in this chapter for the organization of postgraduate education in the country raise certain points of departure from existing administrative procedure and require, for the successful functioning of the institutions that will be set up, close collaboration between the Central and Provincial Governments. It seems essential therefore that legislative sanction should be secured for the implementation of these proposals in order to ensure that the necessary adjustments between the Centre and the Provinces may be placed on a legal basis. But such adjustments between the Government of India and Provincial Governments are required in many spheres in connection with the development of the national health programme. We have recommended elsewhere the enactment of comprehensive legislation in order to secure these objects. In our view any legislation that may be necessary in respect of the proposals embodied here may well form part of such comprehensive legislation and need not be taken up separately.

Refresher Courses for General Practitioners

37. One of the most serious handicaps in the raising of the general standard of medical practice in this country is the absence of any provision for refresher courses. New ideas and new discoveries in medicine come forward with such bewildering rapidity that it is hardly possible for the busy doctor to keep abreast even of those advances in knowledge which are necessary for him in the daily carrying on of his profession. This fact is fully realized in all the more advanced countries and provision is made for both long courses and short compressed courses on a great variety of subjects of medical interest, given by leading experts in large centers which practitioners may arrange to attend. Arrangements are also frequently made for touring units to take the courses to the doctors in the more outlying districts.

38. Opportunities for such courses, at least once in five years, should be available in India for all medical practitioners, including private practitioners as well as the doctors in public service. Our programme of health development will tend, as it proceeds, to absorb large numbers of existing general practitioners as well as almost all the new medical men who will be produced for many years to come. Therefore the members of the State health services will, as the years go by, be increasingly benefited by the proposed refresher courses. The kind of periodical training required by private practitioners and by large numbers of medical officers in public service need not, however, differ because both classes of medical men will be dealing in general practice in the community and not with any specialized form of medical service. In the interests of those who are in public service the refresher courses will lay emphasis on the preventive aspect of medical practice and we feel than such emphasis will be for the benefit of private practitioners also.

39. The whole aim of such refresher courses should be (a) a brushing up of the knowledge which every general practitioner should posses. This should include a revision of the a etiology diagnosis

and treatment of those diseases with which he is in daily contact; (b) an account of recent important advances in diagnosis, prognosis and treatment, with particular emphasis on methods which can be applied by the practitioner himself and (c) an exposition of the recent advances in the diagnosis and treatment of diseases with which the general practitioner should be familiar, though he may not always be able to apply them himself.

40. The emphasis in these courses should always be on the practical aspects of the training and the lectures should be predominantly clinical lecture demonstrations. In fact the whole success of the refresher courses will depend on the extent to which set lectures and theoretical disquisitions are relegated to the background. The conveniences of the general practitioner, the amount of time that he can spend the facilities that are to be placed at his disposal and those available for him at the training centers should all be borne in mind

41. *Nature of refresher courses:*-- There are several lines along refresher courses may be arranged.

(i) Whole-time refresher courses which may extend from two weeks to two months. It is desirable to encourage short-term courses of two to four weeks, as many medical men may not find it practicable to be away from their duties for longer periods.

(ii) Part-time courses which may be

(a) week-end courses
(b) whole-day courses
(c) half-day courses

} spread over weeks or months organized on a systematic basis.

(iii) One educational session once a week or fortnight conducted throughout the year.

(iv) Short-term posts in a recognized hospital for periods ranging from one month to three months.

42. *Place or institution for refresher courses.*—We recommend facilities for refresher courses should be developed in all hospitals attached to secondary centers, district headquarters, medical colleges and the headquarters of each province. Such a wide distribution of provision for these courses is suggested in order to make it possible for medical officers in the State health services and for private practitioners to obtain the training at periodical intervals. In the case of doctors in service these refresher courses will be considered as duty while in the case of practitioners, it is desirable that, in order to encourage them to take the training, they should be exempted from payment of fees and, if they have to leave the place of work, that they should be given a subsistence allowance during the period of training, if they ask for it.

It will be seen that the agency responsible for the development of facilities for refresher courses will be Provincial Governments. Even so, it is suggested that, in university centers, the organization of such courses should be undertaken in consultation with the universities concerned.

The Provision of Special Training in Certain Branches which are so important as to warrant separate consideration

43.Tuberculosis— There can be no question that this disease still remains as one of the "Captains of the Men of Death" in India, and special attention must be given to the training of the personnel necessary to combat it. It is obvious that the mere provision of the hospitals and sanatoria etc. which have already been recommended

will be of no avail unless a very considerable technical staff is simultaneously prepared. The training of this staff divides itself naturally under three heads.

(a) *Undergraduate training.*—The need for special instruction in tuberculosis is referred to in our memorandum where a three months' course of out-patient attendance and clinical demonstrations in the wards is recommended. The lectures and demonstrations should form part of the general teaching of medicine, and we are definitely of opinion that in this subject clinical demonstrations are of greater value than didactic lectures.

(b) *Refresher courses for the general practitioner.*—A four weeks course similar to that outlined by the Tuberculosis Association of India is recommended. it should be given in the chief provincial centers in co-operation with the teachers of general medicine and the special tuberculosis hospitals in the province.

(c) *Postgraduate training in tuberculosis.*—It is desirable that graduates of suitable aptitude should be encouraged to take up postgraduate training in tuberculosis. Such postgraduate training should be taken only after the completion of the internship for one year which every person will be required to undergo after passing the qualifying examination for the medical degree.

44. Postgraduate training in tuberculosis should cover a period of one academic year and the following facilities should be available.

(i) A central clinic with a staff having recognized training experience and with proper equipment for X-ray and laboratory diagnosis, in order to enable it to carry out a full programme of diagnostic and preventive work including contact examination, follow up, and aftercare work. There should be a minimum attendance of 1,000 new cases requiring diagnosis in a year.

(ii) A sanatorium or hospital for pulmonary tuberculosis of at least 150 beds where all modern methods of diagnosis and treatment are carried out and where a minimum of 50 thoracoplasties are done in a year. The teaching staff should have had special training and adequate experience.

(iii) Facilities for study of the diagnosis and treatment of non-pulmonary tuberculosis—For this purpose, the orthopedic department of the general hospitals attached to the university medical training centers may be fully utilized.

(iv) Teaching in pathology, bacteriology, etc. associated with tuberculosis in a department attached to a medical training centre except in those rare cases where a specialized tuberculosis institution furnishes all the available material and has a special department of pathology and bacteriology attached to it.

We recommend that, if these conditions can be fulfilled, trainees should be eligible for a special Diploma in Tuberculosis which should be instituted by the various universities.

45. In addition to the training of medical men as specialists in tuberculosis there is a great need for the training of health visitors having a special knowledge of this disease. It is true that, when the evolution of the public health nurse reaches the practical stage such nurses will include such knowledge as part of their general equipment and this may best be arranged for them by a course of four months

at a tuberculosis clinic and two months at an in-patient tuberculosis institution.

46. In view, however, of the difficulty of securing personnel for some time to come, we recommend that, as a short-term policy, special tuberculosis health visitors should be trained, both male and female, who should possess the school leaving certificate as a basic qualification and should have special training in a recognized centre for a period of at least 12 months, nine months of which should be spent in tuberculosis clinics and three months in an up-to-date tuberculosis institution. In due course, when sufficient trained nurses become available, this interim method of training may be discontinued.

47. A brief reference may be made to the training centers that we have recommended, elsewhere in this report, to be established during the short-term programme. The numbers of places, in which the facilities indicated by us in an earlier paragraph as being essential for such centers can be made available without delay, are only five. During the first five years of the programme these will be supplemented by seven more training centers. During the same period we have recommended the creation of 33 tuberculosis hospitals with provision for 200 beds in each and of a well-equipped and adequately staffed clinic in association with each hospital. These institutions will become additional training centers both for doctors and for nurses (or health visitors) during the second five years. Thus forty five such centers will be working throughout the period. Our scheme of expansion provides for the establishment of another set of 33 hospitals and associated clinics during the second five years and, of these, it may well be that about 20 will function during the last two years of the period

48. *Mental Hygiene.*—This subject must become of even greater importance than it is at present in any advanced scheme of preventive medicine. The increasing strain of modern life playing upon an organism which is often inadequate for meeting it must lead to an increase of the number of cases on the borderline of insanity, and also of those actually under care in mental institutions. There has been up till now neglect in this country, of the advances made in psychological medicine, but any scheme for the future must allow for the training of an extensive staff of clinical psychologists, psychiatrists, social workers and allied personnel.

49. We have drawn attention in our memorandum to the need for undergraduate training in this branch of medical knowledge, both in early and later periods of the course. In addition to such undergraduate training we suggest that postgraduate training in psychiatry should be established at universities in suitable institutions, such training leading to the granting of a Diploma in Psychiatric Medicine.

50. Refresher courses in mental hygiene and psychiatry for the general practitioner and the medical and surgical staff of general hospitals would be useful. Psychiatric units or departments should be established in general hospitals to facilitate both undergraduate and postgraduate teaching, though to open these too early before trained personnel become available to conduct them would be bad propaganda. In the United Kingdom modern developments in mental health services are doing much to lessen fears and prejudices among the public. It is vital that, in any future organization of medicine,

psychiatry should not remain segregated and that it should take its place in the general scheme, subject to the provision of adequate and well trained personnel.

51. In order to make adequate trained personnel available for leaching purposes we may make two recommendations. One is that specialists should be obtained, on short-term contracts, from abroad to take charge of mental hospitals and to organize teaching programmes and social services during the early stages of development. The second is that selected graduates should be sent out to the United Kingdom or the United States of America for postgraduate training in psychological medicine, after holding a resident appointment for about six months in a mental hospital in India, if the candidates have not already had that experience.

52. *Dietetics.*—The subject of dietetics has been badly neglected in all hospitals in India and even in teaching centers and little emphasis has been placed upon this aspect of treatment. Not only have dieticians to be trained who will be in a position to rationalize the system of dieting in public institutions but the teachers them selves have to be trained in this subject, initially, with special reference to the needs of this country. We understand that a step in this direction is being taken by the Central Government in connection with its scheme for the award of scholarships for overseas training in different subjects. We consider that a Department of Dietetics should be established in all teaching centers and that properly trained dieticians should be available at such centers both for organizing departments of dietetics and for carrying on research and the training of dieticians, who should then be employed in hospitals, public institutions, hostels, schools etc.

53. In this connection it may be mentioned that, for the past seven or eight years, under the auspices of the Indian Research Fund Association, training courses in nutrition have been carried out in the Nutrition Research Laboratories maintained by that Association in Coonoor and that well over a hundred workers, who belong mainly to the Health Departments of the different provinces and of certain Indian States, have been trained during this period.

'The Establishment of Courses designed to raise the Existing Licentiate to the level of the "basic doctor"

54. If our recommendation as regards the conversion of schools into colleges is accepted, after some time, there will be no further additions to the ranks of the licentiates. The question, however, of affording to existing licentiates facilities for postgraduate training presents itself and deserves serious consideration. There are two types of such postgraduate training that may be given, (1) training which will enable them to obtain a university degree and (2) advanced "training in the different specialties.

(1) *Courses leading to degree qualification.*—there are a large number of licentiates, particularly those under 40, who are anxious to obtain a university degree. The All-India Medical Council has suggested certain changes which some universities have accepted, the result of which will be that a licentiate can within 18 to 24 months obtain the Degree of M.B.B.S. Special concessions to those who are serving in the armed forces so that they may, after demobilization, proceed to a degree have also been recommended. We consider that

every encouragement should be given to all licentiates who wish to obtain the full medical qualification and they should be given every reasonable facility in the different medical colleges to pursue the necessary courses of study. Bo far only a few universities have seen their way to arrange this, but we suggest that it should be the endeavor of every university and every medical college to reserve a much larger number of places for licentiates so as to enlarge substantially their opportunities to obtain a medical degree.

(2) *Advanced training for licentiates.*—It is desirable that licentiates should have opportunities of training so that they may be in a better position to practice the various specialties. There are at present only a few centres are where such training can be obtained by licentiates. The Calcutta School of Tropical Medicine and the All-India Institute of Hygiene and Public Health afford opportunities for licentiates to acquire their diplomas while the Madras Government have introduced special courses in ophthalmology, obstetrics and gynecology, tuberculosis and clinical laboratory sciences for licentiates leading to a Government diploma after a period of training for one year. We feel that such diplomas should be made more freely available to licentiates on the lines which we have suggested in our proposals for the postgraduate training of university graduates.

55. Three of us (Drs. Amesur and Narayanrao and Pandit Maitra) are of opinion that medical licentiates should be permitted to obtain postgraduate degrees and diplomas granted by the universities with out completing the degree course. They state "There is a very large number of licentiates in the country who are specialists in different branches of medicine and we feel that they should have unfettered chances to take up and compete for university postgraduate degrees and diplomas in their specialties without undergoing the complete- university M.B.B.S. course."

(II) DENTAL EDUCATION

56. The provision of an adequate service for the dental care of the population is now recognized in all countries as an essential part of any comprehensive scheme for public health and medical relief. Unfortunately, in India, this matter has, up to the present, received so little attention from universities or from the State that there are only four institutions available for the training of dentists—two in Bombay, one in Calcutta and the fourth in Lahore. One of the two in Bombay and the dental college in Lahore are supported by the respective Provincial Governments and the other two are under private management.

57. Of those dental surgeons who practice in India, the vast majority treat only the wealthy. For the poor there is practically no provision at all, and throughout the country dentists are employed only to a very limited extent in the hospitals under State control.

58. In the West, a basic minimum of 1 dentist to 3,000 population is not considered to be sufficient, but, as the incidence of dental caries in India is relatively less, it would probably be permissible for us to-work on a basis of 1 dentist to 5.000 population. This arrangement would require about 75.000 qualified dentists in thirty to thirty-five years, on the assumption that the population of British India will be about 375 millions by that time. This would necessitate the training

of at least 2,500 per year over that period and the establishment of 25 Dental Colleges, each capable of admitting 100 students per year.

59. A similar difficulty was experienced in New Zealand and was partly met by the training of "dental nurses" for a period of two years with matriculation as the basic minimum qualification for entrance. These "nurses" were capable of carrying out the simpler operative procedures which take up so much of the average dental surgeon's time, but require no very high technical skill. There is little doubt that, in India, a sufficiently large body of matriculates, both men and women, could be induced to take up this interesting and worth-while work. They could, when qualified, staff the school dental clinics and assist in hospitals and dispensaries, in all cases under the supervision of a fully-qualified dentist. The proposed title for such personnel is "dental hygienists". They would have to be trained at government expense, in the first instance, and required to enter into a bond to work for 5—10 years.

Planning for the expansion of Dental Education-

60. In planning for the expansion of dental education in India there are two initial difficulties:—

(1) The extreme shortage of adequately trained Dental Surgeons available—only 1 to 400,000 of the population and

(2) The difficulty of obtaining teachers of the right caliber to staff new colleges on a large scale.

61. Provision will have to be made for the training of three types of personnel:

(1) The dental surgeon;
(2) The dental hygienist;
(3) The dental mechanic.

62. The responsibility for the training of the Dental Surgeon will of necessity be shared between the Medical and Dental Colleges. The training of the other two classes (dental hygienists and dental mechanics) will throw no additional burden on the Medical Colleges but will be undertaken entirely by the Dental Colleges. Provided all senior posts are made full-time, the professors of the Colleges can easily arrange for all lecture courses for the hygienists and no separate training institutions will be required. There are in India very few properly trained dental mechanics and large numbers will be required to meet the growing demands of the profession in colleges, hospital service, and in private practice. In a State Dental Service it would be wasteful economically if the higher paid dental surgeon were required to devote a large proportion of his time to laboratory work. Given sufficient accommodation and adequate staff, the dental mechanic could also he trained in the Dental Colleges under the Professor of Prosthetic Dentistry and for this purpose an intensive
course in mechanics is suggested.

Dental Colleges

63. All dental colleges should be directly affiliated to a University in order to regularize the conferment of a Dental Degree at the conclusion of the course of study, and a separate Faculty of Dentistry should in each case be created together with a Board of Studies. The minimum entrance requirements should be the same as those

for a Degree in Medicine; the course should extend over a period of four years, and lead to the degree of B. D. S. (Bachelor of Dental Surgery). The courses of study and the regulations for the Degree together with the syllabus should follow the general lines laid down, in Appendix 31.

64. A separate course of two years' duration may be given for those medical graduates who wish to qualify for an additional Degree in Dentistry.

Postgraduate Instruction

65. Appointments as "house surgeons" should be instituted in all Dental Hospitals run in conjunction with Dental Colleges, so that additional training on a salaried basis may be available for graduates. Stipends for such appointments should be on the same scale as those given to medical house surgeons. In view of the present acute shortage of teachers, all graduates in Dentistry should be encouraged to proceed to a higher degree, and provision for this should be made in all universities by the establishment of the degree of M. D. 8. (Master of Dental Surgery) In that way only can a well-trained body of teachers of Dentistry be gradually built up in India.

66. As a temporary measure dental graduates should be encouraged to proceed overseas to study the modern trends of dental education and to pursue courses of training in special subjects in order to qualify for professorial appointments on their return to India. At the same time, during the whole short-term period, it may be necessary to engage dental professors from outside India to supplement the staff of the new colleges, and they would have to concentrate very largely on the post-graduate training of prospective teachers.

Training Centers

67. In view of the difficulty in obtaining well-trained dental teachers for the short-term programme of 10 years it is advisable that the number of dental colleges proposed to be opened in India during that period should be limited. For effective distribution of facilities it is suggested that dental colleges should be opened at Calcutta, Bombay, Madras, Lucknow and Patna, and that the dental college at Lahore should be expanded. Both from the point of view of economy and efficiency- it is desirable that each dental college for undergraduate students should be associated with a medical college, which should be extended so as to include a wing for the dental college. There should be the closest co-operation between the staffs of both these colleges in arranging for courses of study, and the teachers of the medical college should assume responsibility for the instruction of dental students in those subjects which form part of the normal studies of the undergraduate in medicine.

68. Every training centre should train approximately equal numbers of dental surgeons and dental hygienists and it is recommended that each of these centers should be capable of training 100 dental surgeons and 100 dental hygienists annually. Each training centre should normally be so constructed and equipped as to allow of those numbers being accommodated. If such arrangements are not possible, the minimum numbers should be 50 dental surgeons and 50 dental hygienists, if the proposition is to be economical for the State.

69. In short the scheme outlined above envisages, as a first step the replacing of the private colleges in Calcutta and Bombay by Colleges affiliated to the universities, the enlargement of the college of dentistry at Lahore and the inauguration of new colleges at Lucknow, Madras and Patna with facilities in each of these six dental training centers for training 100 dental surgeons and 100 dental hygienists per annum.

Uniformity in Dental Education

70. The establishment of some degree of uniformity throughout India is extremely desirable. It is suggested that ultimately, through an all-India body, the courses of instruction etc which are to be pursued at all dental colleges should be standardized. Such standardization through a central body could be ensured by: —

(a) a uniform standard of entrance with Intermediate Science (Medical Group) 'as the minimum ;

(b) a four year dental course;

(c) affiliation of every dental college to a university, prefer- ably with the creation of a separate Dental Faculty, but, in any case in close liaison with a Medical College;

(d) Uniformity in curriculum standards, technical and clinical requirements, and standards of examination;

(e) a reasonably low level of tuition fees and

(f) Supervision over all dental institutions to see that they maintain the standards of efficiency which are laid down for them.

We have recommended in Chapter XXII the creation of an All-India Dental Council and also of Provincial Councils.

Dental Legislation

71. Instead of each Province having its own Dental Act, comprehensive all-India legislation should be introduced, which should, in addition, ensure complete reciprocity between the different provinces. Dentistry as a science can make little real progress in this country until it is upheld by suitable legislation directed to compulsory registration, and the prohibition of practice by unregistered persons. One of us (Mr. N. M. Joshi) is, however, of the view that such legislation is premature, but if passed it should not be made applicable to those areas where the free services of a registered dentist are not made available within a reasonable distance from the residence of a patient. The following advantages will accrue from registration—

(1) the standard of the profession in India will be raised,

(2) the public will be protected against practice by unqualified and unskilled persons,

(3) It will be ensured that persons trained under the scheme as dental hygienists and dental mechanics will keep within their proper sphere of activity,

(4) Trained dental surgeons will be kept aware of the need to adhere to the standards of professional etiquette which are expected of them.

Registration must be separate for the three categories of dental surgeons, dental hygienists and dental mechanics.

Post-war Dental Services

72. Though we have referred to the subject of dental service in our chapter on the short-term programme, it may be noted here that the object of the proposed expansion of dental education is not only to provide private practitioners, but also to furnish the personnel for Provincial Dental Services which will cater for that huge proportion of the population, which is at present completely neglected. Our
short-term dental programme will attempt to provide:

(1) Dental sections at all the' secondary health unit hospitals that will be established during the short-term and

(2) A travelling dental organization for the area covered by each secondary unit.

73. It is our opinion that the increase in the number of dental colleges and improvements in the training of dental surgeons and hygienists will not lead to satisfactory results unless the State itself undertakes the establishment of a comprehensive dental service to meet the urgent needs of the population. The above proposals for the short-term constitute the beginnings of such a comprehensive-
service.

(III) PHARMACEUTICAL EDUCATION

74. The present standard of training for those engaged in the practice of pharmacy is entirely inadequate and a drastic revision of the education system in this subject is essential. We consider it necessary to provide educational facilities for three classes of persons.

(1) The licentiate pharmacist.
(2) The graduate pharmacist.
(3) The pharmaceutical technologist.

75. The licentiate course will provide for the large number engaged in dispensary work in chemists' shops, dispensaries and hospitals. The initial standard should be the matriculation or an equivalent examination with physics and chemistry as compulsory subjects of study. A two-year course at an approved educational institution is necessary, and the following subjects should be included in the syllabus of study Chemistry, Biology with special emphasis on Botany, Elementary Physics, Pharmacy, Pharmacognosy, Elementary Pharmaceutical Chemistry, Elementary Physiology and Forensic Pharmacy (Appendix 32). There should be two examinations held, one at the end of the first year and the other at the end of the course. The standard of the examination should be controlled by an All-India Pharmaceutical Council which, it is hoped, will be established for the whole of India, and which will maintain a uniform standard throughout the country. After passing the examination, the apprenticeship should continue before an individual is considered qualified as a pharmacist. The title of pharmacist should be conferred on persons who hold this diploma.

76. The course for a graduate pharmacist will be designed to train the smaller number who will be engaged in manufacturing concerns

analytical laboratories and educational medical institutions. It will be a degree course for either the B.Sc. (Pharmacy), or the B. Pharmacy at the discretion of the University concerned. The entrance qualification for this course should be the Intermediate Science with Physics, Chemistry and Botany as a compulsory course of study or its nearest equivalent. The duration of the course should be for three years and should include Inorganic, Organic and Physical Chemistry, Botany, Biology, Elementary Physiology, Pharmacology, Pharmacy, Pharmacognosy, Pharmaceutical Chemistry and Forensic Pharmacy. Holders of the above Degree should be eligible for the pharmacist's diploma without further examination, provided they undergo an apprenticeship for one year.

77. For those desiring to take up the manufacture of pharmaceuticals and drugs on a commercial scale it is recommended that there should be, in addition to the graduate course in pharmacy, an additional course of one year in chemical technology, design, equipment etc.

This degree should be open to those who take up technological studies after qualifying for the B. Sc. Degree with Chemistry as the main subject, or to those who possess the Degree of B. Sc. with Pharmacy. The period of training should range from one year to eighteen months and the special object of the training should be to enable such persons to undertake the manufacture of pharmaceuticals and drugs and to control institutions where the large-scale manufacture of pharmaceutical preparations and the standardization of such preparations are undertaken.

78. The number of institutions in which proper training for licentiates can be given should be determined by the Provinces concerned, taking into consideration the requirements of the Province and the extent to which facilities are available in the proposed training centers. A district headquarters hospital should be in a position to train licentiates, provided proper staff and adequate equipment are available.

79. The training for the degree course in pharmacy should be undertaken by the Medical Colleges affiliated to Universities, and for this purpose, their Departments of Pharmacology and Therapeutics Should be sufficiently enlarged for adequate courses of training to be given. The technological course should be arranged in Technological Colleges affiliated to the University.

80. A detailed syllabus 'for the diploma course in pharmacy suggested by Dr. B. Mukerjee, Director, Biochemical Standardization Laboratory, Calcutta, is given as Appendix 32.

It is proposed that as soon as licentiates under this scheme are available in sufficient numbers, the training of compounders may be done away with.

(IV) THE EDUCATION OF PUBLIC HEALTH PERSONNEL

Introduction

81. Scientific instruction in hygiene may be said to date from when the brilliant chemist and physiologist Max Von Pettenkofer to the newly created chair in that subject at Munich, and there founded the first University Institute of Hygiene. The

English D. P. H. was instituted in 1886 with the dawn of bacteriology and preventive medicine, while the first University School of Hygiene in the United States of America was established at Johns Hopkins in 1919.

82. No branch of medical education is in such a state of flux as that which concerns the training of workers in the field of public health. This will be evident from a study of the report on European Institutes and Schools of Hygiene issued in 1938 by the League of Nations, from which it appears that, at that time, there were four types of schools engaged in giving instruction in public health:

(a) University institutions organized for public health teaching and research work. At present there is only one example in Europe— the London School of Hygiene and Tropical Medicine. This is an academic institution with all the duties and privileges of a University School.

(b) University Institutes of Hygiene which have combined with the regional Institutes of Hygiene to form a single unit, supported in their work by both the Education and Health authorities. The Professors of Hygiene are at the same time Directors of the Regional Institutes. Instruction in hygiene is given to medical students as well as postgraduate training. Such institutes are found at Nancy, Jassy and Bucharest.

(c) Institutes of Hygiene which organize public health courses by means of a department known as the School of Public Health, in which the staff of the Institute provides the greater part of the instruction. Such institutes are found at Warsaw, Budapest, Rome and Ankara.

(d) Schools of Hygiene as special institutions of the State Health Administration at Zagreb and Athens. These schools, in addition to giving courses in public health, carry out part of the programme of the State Health Service, Zagreb in the matter of health education, surveys and sanitary engineering, and Athens in anti-malaria work and sanitation.

The postgraduate training carried out by these institutions is not of a uniform type, and the duration of the courses varies considerably, from six weeks at Sofia to 12 months in Athens and London. The programme also differs widely especially as regards the time given to the different subjects.

As regards the training of public health nurses, most countries have established schools and the courses are more uniform, averaging three years in length. Courses for Sanitary Inspectors vary from Warsaw 4 months to Zagreb 1 year.

The primary aim of the institutions is not only to train doctors in public health, social insurance, and social assistance, but also to carry out pure and applied research. Only in England, France, Hungary and Greece is a diploma or certificate in Public Health' compulsory for applicants for public health posts.

Another type of instruction exists in Russia where there are no Schools or Institutes of Hygiene in the accepted sense, but where Hygiene forms one of the three faculties which provide training for a medical degree in each medical school.

83. We have, in other chapters of this section, adverted to the extreme importance of presenting the principles of preventive and. social medicine to students of medicine, nursing and other branches of health activity during their period of training. We have recommended the setting up in medical colleges of adequately staffed and equipped departments of preventive and social medicine as centers of teaching and research. We have also suggested the provision of rural and urban health organisations in association with these departments, in order that these centers may provide facilities for field work to students and for the investigation of community health problems to the different departments of the college. We have expanded our proposals regarding the education of nurses so as to include the training of the public health nurse.

84. The postgraduate training now provided through the course for the diploma in public health will we believe, be largely incorporated in future in the course of training for the undergraduate, in view of the growing demand for doctors trained equally in preventive and curative health work. Postgraduate training in preventive and social medicine will then have, as its objective, the provision of facilities for advanced training in such branches of the subject as malariology, maternity and child welfare, industrial hygiene, public health administration, epidemiology, public health laboratory practice and statistics. Such specialized training may be of two types. The first will be of a limited character and will have as its purpose the equipment of health workers with a reasonable measure of proficiency in these subjects. This course of instruction may, it is suggested, ordinarily range from about three months to one year. The second will be for those who desire to attain the status of specialists in each of the above mentioned branches of preventive health work. For them we suggest that the period of training should be about three to five years. The candidate should be attached to the preventive and social medicine department of a medical college and, during this period, he should associate himself more and more with the teaching, research and administrative activities of the department, including participation in the field training given to the students. We anticipate that such specialization will generally be undertaken after an individual has had some period of practical experience in preventive and remedial health work. From the persons so trained it is suggested that recruitment can be made of suitable individuals for the more responsible administrative posts in the health department as well as for the higher teaching posts in the departments of preventive and social medicine in medical colleges.

85. In view of the possible developments suggested above we believe that training in preventive and social medicine is likely to be developed in two types of institutions, (1) in the departments of social and preventive medicine associated with- medical colleges and (2) in special institutions on the lines of the All-India Institute of Hygiene and Public Health, Calcutta, or the London School of Hygiene and Tropical Medicine. This second type of institution will probably devote itself solely to postgraduate work and to research into community health problems. It will also require the provision of field training centers to work in association with it.

86. There remains for discussion in this chapter the question of training three types of workers whose activities are solely related to.

the problems of preventive medicine. We refer to the Public Health Engineer, the Public Health or Sanitary Inspector, and the Public Health Laboratory Worker and Technician.

A. The Public Health Engineer

87. Our proposals for postwar health development require a large number of qualified public health engineers for the tackling of the problems of environmental hygiene. Public health engineering applies knowledge concerning the practical control and modification of the human environment to the prevention of disease and the promotion and maintenance of health. The major activities of a public health engineer include the following: —

1. Quantitative and qualitative control of water supplies.
2. Removal of solid and liquid community wastes.
3. Control of milk and food right from production through transport to distribution.
4. Control of air pollution.
5. Control of thermal environment in housing, industry, etc.
6. Control of pollution of streams, rivers, harbors, waterways, etc.
7. Control of animal, insect and bacterial agents of communicable diseases.
8. Safety and control of special occupational hazards in industry.
9. Control of light, noise, etc.
10. Promotion of amenities such as parks, playgrounds, bathing places, etc., slum clearance, town planning, general cleanliness and control of offensive trades.

88. Other activities are continually being added to this list and it is evident that such specialised work calls for engineers with a definite public health outlook and a broad general education. A reference to the survey section of our report will show how backward is the control of sanitation in this country. In order to make a definite improvement in existing conditions it is estimated that about 2000 adequately trained engineers will be required, with a yearly allowance of 80-100 for replacements.

89. As regards the type of training required, we trust that the enumeration of the public health engineer's functions made above will remove any impression that may exist that a course of instruction in Applied Hydraulics given to a student of Civil Engineering is sufficient to provide the type of worker who can satisfactorily perform the important duties expected of him.

90. A beginning in training can be made at the All-India Institute of Hygiene at Calcutta in collaboration with the Bengal Engineering College and the Calcutta University. Arrangements should be made to provide for at least 50 students at first on an all-India basis. For the first ten years 80 per cent of the admissions should be restricted to specially selected engineers between the ages of 25 and 40 who are already employed in the Provinces and States.

91. The course should consist of academic instruction and demonstrations for eight months with an examination followed by six months' practical training at selected centers. Those who are not

already in the service should undergo practical training for one year. Candidates may be awarded a degree or diploma on the completion of the course.

92. A syllabus for a special course for qualified engineers to become public health engineers and more elementary courses in public health engineering (1) for incorporation in the training course of all engineering students qualifying for a degree in Engineering and (2) for Engineering Supervisors to be employed in small municipalities are given in Appendices 33, 34 and 35. These were prepared for us by Professor Subrahmanyan, All-India Institute of Hygiene and Public Health.

93. At a later stage it is proposed that this subject, should occupy a definite place in the courses of studies provided at the different Engineering Colleges, so that instruction in public health engineering; will form a part of the training of all those who qualify as engineers.

94. It is further suggested that opportunities should be given to public health engineers in public service to visit foreign countries for the study of recent advances in this subject. For this purpose the grant of four or five fellowships annually is recommended. B. The Public Health or Sanitary Inspector

95. The sanitary inspector is essentially a British Institution and the work of such an inspector has become more highly technical and specialized within the British Empire than anywhere else in the world. He works under the Medical Officer of Health and is, in fact, his eyes and ears, his sanitary policeman, who enforces the sanitary laws of the community. In Great Britain the certificate of the Royal Sanitary Institute and the Sanitary Inspectors Joint Examination Board is an obligatory qualification. The instruction leading to the certificate extends over six months and is given in approved technological schools. After this the candidate is required to undergo practical training for a further period of six months.

96. In India the sanitary inspector is often the only officer to look after public health and public works in many of the smaller municipalities; his duties are heavy and his professional training not adequate to meet the requirements of some of his highly technical. duties. Hence he generally confines himself to supervising conservancy and spends the larger part of his time in writing reports instead of concentrating on outdoor work. The position of the inspector in rural areas is worse, for his area is so large that it is difficult for him even to complete his round of visits. He literally has no time for a many of the duties which are allotted to him. In Bengal, there are at present 575 Sanitary Inspectors or 6ne per thana of 80,000— 100,000.

97. British India will require a minimum of 12,000 Public Health Inspectors at the rate of 1 per 25,000 of the population, with replacements of about 800 annually. The present number under employment is probably in the region of 3,000.

98. The training given to those inspectors must prepare them to discharge their duties efficiently, and it must not be merely academic. The present position is unsatisfactory. The minimum standard of preliminary education for an inspector should be the school final or matriculation with mathematics or science subjects. A proposed

curriculum for the course is in Appendix 36. The period of training is one year.

99. We wish to add a final observation on this subject. In order to obtain and retain the services of intelligent men for this important work it will be necessary to offer adequate rates of pay. The 'apostle of health" will not carry much conviction if he is not paid enough to maintain his own health.

C. Public Health Laboratory Workers

100. Public health laboratories have not so far undertaken the training of laboratory workers. There are many fields in which specialized training is necessary to enable such persons to staff public health laboratories at other centers. Water-analysis, examination and analysis of food-stuffs, the place of disinfectants and their protective value, problems connected with industrial health, etc., should all be taught and laboratory workers so trained will fill a definite place in any scheme of organized public health laboratory practice.

(V) THE TRAINING OF NURSES AND MID WIVES'

A. Nurses

101. The conditions under which nurses have hitherto been required to carry on their profession in this country are recognized by all thinking person's to be deplorable. As long as such conditions obtain it is inconceivable that Indian women from the more educated families will enter that profession in appreciable numbers. We give below in tabular form the main, but not the only, objectionable features of the present system together with the remedies proposed. It will be noted that in all cases it is within the power of Governments, if they so wish, to remove these obstacles which cause many aspiring candidates to refrain from undertaking this work which is of such prime importance to the welfare of their country: —

Present condition	Proposed remedy
1. Alack of any professional status	The granting of gazette (civil) rank to persons who by reason of pay drawn or the position of responsibility they occupy may reasonably be given such rank.
2. Underpaid senior positions	Salaries to be reviewed and increased so as to render the profession attractive and to meet local economic requirements.
3. Grossly understaffed hospitals with consequent overwork.	An attempt to reach in due course the international standard of one nurse to *2 1/2* beds.
4. Deplorable living conditions with gross overcrowding. 5. Diet not balanced and insufficient for growing young women. 6. No recreational or cultural facilities	A fresh and vigorous approach to the problem of accommodation and diet by the authorities concerned and the provision of requisite amenities.
7. No general superannuation or pension schemes.	Inauguration of a pension or provident fund scheme.

The problem examined in detail

102. There are at present the names of 9,500 nurses registered with the various Provincial Nursing Councils, but many nurses register

in more than one province, many are too old to practice, some have died and some have left the country, often without having taken their names off the registers. In our opinion a more accurate figure would be in the region of 7,000, which is equivalent to a ratio of one nurse to 4.3,000 of the population, or to 124 square miles of territory in British India though it must not be thought that the few nurses available are spread evenly over the country in this proportion. Many—only too many—millions of the population cannot afford the luxury of a nursing service, and many even of the State-managed hospitals are without these essential personnel. There are not in the whole of India today so many qualified nurses as there are in London alone.

103. The nurses whose names are on the various registers differ greatly in their professional ability and their educational background. There are at present approximately 190 schools where training recognized by the Nursing Councils is undertaken, but these training schools are far from satisfying even the minimum requirements of a modern training institution. In most of them students are employed as unpaid nurses, working long hours with no adequate time for study. In that way in almost every hospital in India, the education of the nurse is sacrificed to the urgent demands of the nursing service. Furthermore, in no hospital is there a staff adequate either in numbers or in experience to provide the necessary instruction and the supervision of training. An All-India Nursing Council, which we are recommending elsewhere in this report, will ensure that the required standards of training are attained by all the training institutions in the country, and that student nurses are regarded as students and not as employees of the hospitals at which they are studying.

104. (a) *The living conditions in training centers.*—The living conditions in training centers at present are, in most cases, deplorable. Overcrowding is almost universal and evens the barest essentials for hygienic living are not provided. In some centers student nurses are even expected to cook their food in their own rooms in their off-duty time, while recreation rooms for nurses are practically non-existent. These conditions require the most drastic revision. Young growing women who work hard require well-ventilated rooms with sufficient regard to privacy and with special arrangements for quiet for night nurses, sufficient light and air, and an adequate diet supervised by a properly qualified person. The student nurses should be provided with accommodation of this type, free board, laundry, uniform and no charges should be levied for any of the amenities provided. Besides this they should be given a stipend ranging from Rs. 15 to Rs. 25 per menses. The living accommodation for student-nurses should be separate from that of staff nurses, and should include dining, sitting and bed rooms, proper bath rooms and lavatories, the apartments being fully furnished not on any expensive basis, but *to* meet the ordinary requirements of students. Proper facilities should be provided for recreation both indoors and out-doors.

105. (b) *The target to be aimed at.*—The target to be aimed at is the provision of one nurse to 500 of the estimated population at the

end of 30 years—roughly 500 million. This will mean an attempt to raise—

20,000 nurses at the end of	5 years
50,000 " "	10 „
100,000 " "	15 „
250,000 " "	20 „
500,000 „ „	25 „
1,000,000 „ „	30 „

106. The actual number of nurses that can be trained depends upon three factors—

(i) the number of young women with a proper educational qualification who will be prepared to enter the nursing profession;

(ii) the number of properly equipped and properly staffed training institutions that will be available to train such nurses and

(iii) the financial resources available for such training.

107. The great need is to elaborate a satisfactory short-term policy. The long-term programme is so intimately bound up with post-war development in other spheres, particularly education, that it must await their collateral development. There is no doubt that the spread of educational facilities, better teaching and the introduction of compulsory education up to at least the high school standard will eventually attract larger numbers to the profession. Meanwhile the immediate need is for a thorough overhaul of the existing training centers together with the establishment of others better designed and more adequately equipped.

Establishment of Preliminary Training Schools

108. It must be borne in mind that not all provinces possess the same facilities for the training of nurses. In some of them the education of women has progressed further than in others. We believe that in South India, particularly in the southern districts of the Madras Presidency, in the States of Travancore and Cochin, in Mysore and the Bombay Presidency, if the conditions of service are made more attractive, a larger number of students will be attracted to the profession of nursing. As regards the rest of India the outlook is not so hopeful at present. A great handicap to the immediate setting up of regular training centers is the extreme shortage of efficient sister-tutors, and it is felt that the only immediate solution of. the problem which will permit the full utilization of the very few who are at present available is the establishment of preliminary training schools at suitable centers, though it must be clearly recognized that this is an emergency short-term measure and not intended to replace the regular systematic training of nurses. It is proposed, therefore, that a sufficient number of training schools should be established over as wide an area in each province as possible.

109. These schools will give elementary instruction to students who wish to become nurses, mid wives, public health nurses and hospital social workers. The basic preliminary course proposed by us for these institutions is devised to install into the students a preventive approach to health problems from the very commencement. The nursing course can be made interesting only if it is correlated with existing educational backgrounds and linked to community and home

conditions. The elementary course is so planned that it will provide those students, who do not proceed to the full professional course, with valuable experience immediately applicable in their own homes and villages.

110. Candidates should not be less than 17 years of age and the course should not be less than 14 weeks—13 weeks for study and one week for examination. This permits of three sessions annually, allowing 10 weeks for transfers and admission of students and holidays for teaching staff. The approximate number of hours of tuition per week is 34, allowing for rest during one afternoon and a whole day in each week. (Details of the proposed course are given in Appendix 37.)

The Training of Nurses

111. In order to ensure that our recommendation should be of the most practical nature we obtained the advice of a Conference of the representatives of the civil nursing profession from the provinces and of the Army nursing services of India, the United Kingdom and the United States, who have furnished us with material for the following scheme, which we now advance for training the large number of nurses who will be eventually required.

112. It is recommended that there should be two grades in the profession with corresponding types of training i.e., a junior grade and a senior grade. In addition to these two grades it is proposed that a University Degree course in nursing should be established, wherever possible, and that postgraduate courses for nurses should be instituted in order to train selected nurses for assuming the more responsible duties of their profession.

113. *The course for the junior certificate.*—the age for admission should be 17 years and the entrance qualifications should be not less than a completed course of the middle school standard. This standard of entrance may be raised as the education of women in India progresses and this course ultimately abolished as soon as there can be one uniform course of training for the nursing profession. The details of the suggested course of lectures and demonstrations for this certificate are given in Appendix 38. The length of the course should be three years.

114. *The course for the senior certificate.*—the minimum entrance qualifications for this course should be a completed course for matriculation, school leaving certificate, the Junior Com bridge or their equivalent. Training should extend over three years while, if midwifery is included, four years should be adequate to prepare a nurse to assume any responsible post in the field of general nursing or of public health. A draft syllabus for the senior certificate course is given in Appendix 39.

Though the courses arranged for the junior and the senior certificates should be entirely separate, it should be arranged in planning all syllabuses that the preventive side of medicine and the social aspects of nursing are brought continually before the student throughout her training. Instruction may be given either in English or in the chief languages of India. If instruction is given in these different languages it must be ensured that text-books are of the proper standard and that they are brought up-to-date at suitable intervals. In order that this may be ensured it will be necessary to establish a central agency or editorial board.

115. *Examinations.*—The qualifying examination for nurses should be controlled by the different Provincial Nursing Councils and Medical Examination Boards subject to the general supervision of standards by the All-India Nursing Council. There should be two examinations, an intermediate at the end of the preliminary period of twelve to eighteen months of training and a final at the completion of the course. The examinations may be held twice a year. While emphasis should undoubtedly be placed upon examinations as fit and proper tests to ascertain the progress that the nurse has made in the assessing of educational assets greater emphasis should be laid upon the adequacy of the teaching centres, the facilities which they have at their disposal, the equipment they possess, the number of nursing staff, the hours of work for pupil nurses, the qualifications of those engaged in training, and last, but by no means least, the qualifications, attainments and personality of the head of the Nurses Training Centre.

116. *Hours of work.*—The hours of duty at present required from student nurses vary in different hospitals, ranging from 45 to 70 a week for day duty, and from 49 to 90 a week for night duty. Few schools include lecture and class room demonstrations in the duty hours, while many expect the student nurse to attend classes when off duty. It should be clearly realized that it is impossible for young growing women to carry the burdens of hard work and hard study at the same time without a danger of interference with their health. The International Council of Nurses recommends a 48-hour week both for day and for night duty and in this all classes and lectures are included. At least one hour of study should be arranged for each hour of class work and the total of classes, study and duty should not exceed 10 hours a day in a six day week. This arrangement leaves the student the necessary free time for recreation, hobbies and social contacts which are so desirable for the development of a well-balanced personality. We strongly recommend that this international standard should be the target for all training institutions for nurses in this country.

117. *Requirements of training centers.*—It is desirable that each training centre should provide training in all the subjects of the curriculum. In some cases training is given only in hospitals for women and children, while in other cases it is restricted to hospitals for men. As an interim measure we suggest that, in the former case, the training centre should have affiliated to it a hospital where both surgical and medical male patients are treated, and that nurses-should be posted there for a period of at least six months. In the latter case affiliation should be sought with a hospital for women and children and training given therein for at least one year. In either case the affiliated hospital should be adequately staffed and up to the requirements of an institution for the training of medical men during internship.

118. *Qualified staff in teaching centers.*—No teaching centre for nurses can adequately fulfill its role unless it is manned by a well-qualified staff who, besides bearing the responsibility of looking after the patients, will find time for supervising, directing, and advising the student-nurses when they are on duty. It is recommended that for every 25 beds in a teaching hospital, there should be one Sister and three Staff Nurses in order to provide for supervision of the ward nursing personnel during the whole 24 hours. This excludes

the administrative staff required for night duty. In a hospital with 300 beds or less, there should be a Nursing Superintendent, an. Assistant Nursing Superintendent, a Sister-Tutor, and a Home and House-keeping Sister. The administrative staff should never be less than three since it is necessary to provide for relief, off duty and for vacation. In a hospital with over 300 beds, the staff should consist of a Nursing Superintendent, a Theatre Sister, an Assistant-Nursing Superintendent, a Home Sister, two Sisters tutor, and a House-keeping Sister specially qualified with a sound knowledge of nutrition. It is our hope that eventually these recommendations-will apply to all hospitals, whether teaching centers for nurses or not, but as a short-term policy we advocate that they should be considered as absolutely essential for the efficient running of a teaching hospital. There should always be a Night Supervisor who is specially qualified to carry on the administration of the hospital at night. It should not be expected that the Night Supervisor should, also undertake the responsibility for emergency work in the operating theatre. Arrangements should be made for two staff nurses to-be available for these night emergencies. In addition to the minimum staff suggested above supplementary provision should be made for the relief of the regular staff of the hospital during vacation and sickness.

119. *Advanced study for trained nurses.*—such courses in hospital administration, sister-tutor courses, courses for public health super visors and others should be instituted as early as possible. At present in most of the Provinces there are no properly qualified teachers to conduct such courses or to conduct proper courses in public health nursing. We recommend that a suitable number of carefully selected Indian ladies should be sent abroad at an early date to study in Universities, such as London and Leeds in the United Kingdom, and Toronto and Nashville Tennessee in the North American Continent, where courses of instruction are available. At least 36 scholarships should be given for this purpose every year for the next five years, and if the experiment is successful, the number of these scholarships should be increased.

120. *University education.*—Degrees in nursing are given by certain Canadian and American Universities and London University awards a Diploma in this subject. We consider it essential that such a degree course in nursing should be instituted as early as possible in India in order to provide leaders for the nursing profession from among the more highly educated and cultured ladies. It is proposed that, as a first step, the School of Nursing Administration at Delhi- should be transformed into a College of Nursing. It is hoped that eventually the three provinces of Madras, Bombay and Bengal and the larger provinces will similarly develop their own Nursing Colleges. When those sent abroad for training return it is hoped that a degree course may be instituted in association with these Colleges of Nursing so that there may be combined in one unit a Model Preliminary School, a five-year degree course and advanced courses in Hospital Nursing Administration in the Teaching of Nurses and of Public Health Supervisors.

121. *Accommodation.*—It is emphasized that, since nearly all existing institutions are inadequately staffed, the nursing which they provide is and must remain, of a low standard until urgent and necessary improvements have been undertaken. The main limiting

factors in this respect are accommodation and funds it accommodation were sufficiently provided, an extra three or four thousand nurses could be trained in the existing institutions alone. it is estimated that approximately one thousand candidates are immediately available for the proposed Junior Certificate Course and a further eight hundred for the Senior.

In view of this serious hold-up in training it is urged that immediate consideration should be given to the problem of providing the required accommodation, either by the construction of new Nurses Homes, or by the commandeering of buildings suitable for this purpose. We feel that, without adequate arrangements for accommodation, the most important of our recommendations for the training of nurses cannot be carried out. In view of the obvious fact that, on demobilization, large numbers of nursing auxiliaries, both male and female, will be demanding facilities for completing their training, it is essential that these constructional works should be undertaken without delay. Priority for building materials should be given to those institutions which have made repeated and urgent requests for supplies.

122. *A Pre-nursing Course.*—In order to permeate the community with elementary notions regarding hygiene and the basic principles of nursing and mother craft it is proposed that a pre nursing course should be introduced in the final year curriculum of all high schools as an optional subject. Such a course would serve the double purpose of providing young women with useful knowledge wherewith to commence a nursing career, and if that is not intended, with useful experience in the management of a home and the care of children. A suggested schedule is set out in Appendix 40.

We hope that such a scheme, if given effect to, would help in providing recruits for the proposed Junior Certificate Courses at the Preliminary Training Schools. A kindred proposal, which might work to the same end by providing useful training during the period between the school leaving age and entrance to a training school, is the establishment of properly staffed centers for the day custody the children of mothers who are at work. Such centers could have considerable scope for giving elementary instruction in hygienic principles to girls who intend to take up nursing later as a profession.

123. *The status of certificated nurses.*—In some of the more advanced countries of the world the nursing profession is recognized as being equal in status to the medical profession, in that both are concerned with the healing art although their duties and responsibilities may differ. The Matron, or the Nursing Superintendent, contributes her full share towards the administration of the hospital.' She attends the weekly meetings of the House Committee, she works in close collaboration with the Superintendent of the hospital and she is regarded by the Consultant and Resident Medical staffs as their colleague. In India, however, in the opinion of the general public, the status of nurses is so low that Provincial Governments place them in the subordinate grades. The recent granting of commissioned rank to members of the Indian Military Nursing Service has done something to remove this stigma and has raised that service to the level of the Imperial and Dominion Nursing Services. We have already made our suggestions regarding the grant of gazette status to nurses.

124. *The safeguarding of nurses against ill-health and disability: provision for old age.*— We consider it essential that nurses should be protected in sickness and in old age. The health organization that we have recommended, if developed on the lines indicated by us, will bring within its fold a considerable proportion of the existing nurses as well as almost all those who will be trained for many years to come. In public service medical leave is one of the privileges which all enjoy while provision for old age is usually made either by the grant of a pension or through a provident fund scheme. It will be remembered that the services under local authorities will, under our health organization, be provincialised so that the benefits under consideration will become applicable to all classes of nurses maintained out of public funds. Thus there will be adequate provision for sickness and old age in respect of the vast majority of members of the nursing profession. We recognize, at the same time, that a certain number will remain outside the public services. We have in mind such nursing services as may be maintained by voluntary organisations, including missionary bodies. We would suggest that the authorities concerned should investigate the possibility of providing the benefits under consideration to this class of nurses. The transfer of the services of a person from one Government to another does not affect such medical leave, pension or provident fund as she may have earned under the previous Government, because these benefits are also transferred to her credit in the new post. We consider that nurses serving outside the public service should also have this benefit of "transference of their earned sickness leave and pension or provident fund. We suggest that the "Contributory Federated Superannuation Scheme for Nurses and Hospital Officers" introduced in Great Britain in 1928 may serve as a model for a scheme to be introduced in this country in order to afford these safeguards to this particular Section of the nursing profession. One of the strongest and most important features of that scheme is that membership is continued throughout the individual's career. If contributions are suspended on migration all contributions already paid remain intact for the benefit of the member and accumulate at compound interest. In no circumstances whatever can a member lose any part of her contributions.

Although we have drawn attention here only to the need for providing such benefits to nurses in the service of private organisations, we feel that the question is one of much wider application and that other Workers also require similar protection. The matter therefore deserves consideration at the hands of the authorities concerned. Such provision will appropriately form part of any general scheme of social security for the community as a whole.

Another question also seems to require consideration. Nurses are, in spite of all precautions that may be taken, continually exposing themselves to injury to their health during the normal discharge of their functions. There are also other types of health workers who are exposed to similar hazards to their health. Monetary compensation for specific damage to health caused by conditions arising out of a person's occupation is a recognized provision for industrial workers in most countries, and we feel that an extension of this benefit to workers in other fields of activity useful to the community is a reasonable proposition. Such a proposal may eventually embrace, within its scope most persons who are gainfully employed outside

their own homes and its adoption is therefore likely to raise financial considerations of a far reaching nature. We do not consequently feel justified in doing more than throwing out the suggestion that the grant of compensation for damage to health due to causes associated with a person's occupation has a far wider field of application than that of industrial workers.

B. Male Nurses

125. Owing to the social conditions and customs in certain part of India, male nurses play an important part in the health programmer of India. Men can go out to nurse in districts where women cannot go, and do work which women are unable to do. It is a regrettable fact that some excellent schools for male nurses have had to be closed because those trained in them have found it difficult to obtain posts with a salary of more than Rs. 15 to Rs. 40 a month.

126. It is obvious that, with the present acute shortage of trained, nurses, male nurses and male staff nurses should be trained and employed to a considerable extent in the male wards and male outpatient departments of Government Hospitals, thus releasing women nurses for other work. The social background, professional education and entrance qualification for male nurses should be the same as for women nurses, with an equivalent salary for corresponding work. Proper living quarters for single men and family quarters for married nurses will have to be provided.

C. Public Health Nurses and Health Visitors

127. There are in India today about 750 or 800 health visitors, *i.e.* 1 to 375,000 of the population in British India. Very few of these health visitors are registered nurses. Most of them are certified mid wives and have had a 9 to 18 months training in the duties of health visitors. Their work has been almost entirely limited to maternity and child welfare. None of them are rendering that type of service to the individual, family and community which is considered necessary in health programmes today. They function as maternity supervisors and train and supervise *dais* in order to provide for trained attendance on the mother at childbirth. They carry out much valuable work in their health centers and by home visiting, but the quantity of work to be done, the limited training of the health: visitor and the widespread influence of superstitution, ignorance and unhealthy habits, make effective health education of .the public extremely difficult. In order to promote preventive work on more efficient lines it will be necessary to replace this partially trained type of health worker by the more fully qualified individual, whose functions we shall discuss presently.

128. It is regrettable that there is no uniform standard for the education and registration of health visitors in India. Four out of the eight existing schools have doctors and not health visitors in charge, and only one of these doctors has a diploma in maternity and child welfare. Only four of the schools have under the control of the school, field training centers which are meant to provide practical experience for the student health visitor. The lack of any organized system of social service throughout the country greatly handicaps the efficient functioning of health visitors.

129. The form of training which has been found elsewhere to give the most satisfactory results is that devoted to the production of a public health nurse. This has proved to be more effective in operation and less expensive to administer than the provision of multiple specialized services such as maternity and child-welfare, school- health and tuberculosis work. The public health nurse is a type of health worker hitherto unknown in this country. We may indicate her functions by the following quotations from an article entitled "Functions in Public Health Nursing" in the journal, Public Health Nursing, of November 1936.

"Public health nursing includes all nursing services organized by a community or an agency to assist in carrying out any or all phases of the public health programme. Services may be rendered on an individual, family, or community basis in home school, clinic or business establishment.

It is the responsibility of the public health nurse to assist in-analyzing health problems and related social problems of families and individuals; to help them with the aid of community resources to formulate an acceptable plan for the protection and promotion of their health, and to encourage them to carry out the plan. The public health nurse:

1. Helps to secure early medical diagnosis and treatment for the sick;
2. Renders or secures nursing care of the sick, teachers through demonstration and supervises care given by relatives and attendants;
3. Assists the family to carry out medical, sanitary, and social procedures for the prevention of disease and the promotion of health;
4. helps to secure adjustment of social conditions which affect health and
5. influences the community to develop public health facilities through participating in appropriate channels of' community education for the promotion of a sound, adequate community health programme and shares in community action leading to betterment of health' conditions."

130. The nurse who can, in her relations with a particular family, be engaged in tuberculosis follow-up, prenatal care, the conduct of delivery and the subsequent postnatal care of mother and child has earned the position of a family friend, and one to whom the family will turn in their troubles. She becomes in fact the "Minister of Health" in the home.

181. The public health nurse who is to carry out this generalized' type of nursing service should be a fully qualified certificated nurse and midwife. Her training will, however, differ to some extent from that of an ordinary nurse. The educational programme for her should stress, throughout, the preventive point of view. A curriculum should be worked out, which will carefully balance an integrated class room instruction in the science and art of nursing and in social studies with well-planned experience in hospitals community health services and in the home. Experience of rural work;

should be specially provided. The course of training for this class of health worker should be carefully worked out so as to suit Indian conditions. We therefore recommend that, in the first instance, the training of public health nurses should be organized in association with important training centers, where medical colleges and nursing educational institutions for the higher grade of nurses are provided. In these centers facilities for field training will also be available so that adequate opportunities can be provided for the trainees in public health nursing to acquire public health experience and to participate in domiciliary practice. At a later stage, in view of the necessity for providing a very large number of public health nurses to man our health services, it is suggested that nurses undergoing training in the ordinary training institutions might be attached, for specific periods of time, to the field organisations of medical colleges in order that they might obtain the necessary training in public health and domiciliary service.

132. We anticipate that, in due course, the need for facilities for training in community health work will increase considerably because we believe that nearly all types of health workers will require such training if they are to perform their functions satisfactorily. We have therefore provided, in each primary unit, associated with teaching institutions housing accommodation for 12 trainees, who may at any time consist of doctors, nurses, mid wives or other types of workers.

133. A course of four to five years should be sufficient to cover the general nursing, midwifery and public health training necessary. It must be made quite clear that, at present, there are no properly trained and qualified teachers or supervisory staff capable of conducting such a public health nurses training school in India. In building up such a staff it is hoped that advantage will be taken of the proposal made above to send selected Indian women abroad for study in connection with the more advanced problems of nursing education. It would be most suitable if, among the 36 students suggested for this study, some could be sent for specializing in the training of public health nurses, who would, on their return, cooperate in the work of the College of Nursing. In that way only, it is thought, can an adequate and comprehensive scheme be evolved for the development of this essential type of training?

134. About 125,000 public health nurses will be required in British India alone by the time our long term programme is reached, taking into account the leave reserve necessary for the maintenance of the service. As an interim measure every effort should be made to impress on health visitors, during their training, the requisites of normal health the preventive measures to be adopted against disease and the elementary principles of social medicine.

D. Mid wives

135. Soviet Russia holds the midwife in such esteem as the agent who. above all others, entering the homes of the very poor, can install there the principles of health and the care of infants, that an institute has been established in Moscow for the "protection of Motherhood and Infancy" the main function of which is to establish standards and supervise curricula for the training of mid wives at the schools which have been set up all over the country. A two

years' course of theoretical and practical training is given (sigerist— Socialized Medicine in U.S.S.R.). It is interesting to note that, whereas the midwife is a standing institution in most other countries, she is almost unknown in the U.S.A.

136. In India today there are approximately 10,856 certificated mid wives, and 662 assistant mid wives registered by the Provincial Councils, but for the reasons that we have already given in the case of nurses, we feel that these figures are probably in excess of the correct number. It is likely that an accurate estimate of the number of mid wives actually available for midwifery duties is in the region of 5,000. In order to provide one midwife for every 100 births, approximately 100,000 mid wives will be required for British India and, to maintain that number, about 2,000 fresh pupils will have to be taken under training each year.

137. We have drawn attention elsewhere to the appalling rates of maternal and infantile mortality in this country and have adverted to the measures that should be undertaken to sever what is really the tap-root of the tree of ill-health, which overshadows the people of India. One of the most important of those measures is the provision of the services of a trained midwife for every confinement that takes place in the country. It will therefore be seen how essential it is to arrange for the proper training of this class of personnel in very large numbers.

138. The widespread efforts made in the past to attract Indian women of even a low standard of education to the profession of midwifery have, in most parts of the country, met with limited success. It is true that, in Madras, the situation is not so difficult as in other parts of India, a probable cause being the fact that the general level of education among women in that province is higher than in other provinces. We therefore feel that, for many years to come, it will be necessary to encourage the training of the indigenous *dai.* She as the hereditary midwife, has her recognized place in the Indian home throughout the country and she therefore seems to be a valuable agent for spreading all over India the practice of modern midwifery, provided she can be made, by adequate training, to render reasonably efficient service to the mother and infant during the discharge of her functions. We realize that the dead weight of ancestral tradition may be so heavy on her that, in attempting to educate a woman of this type, the success achieved may prove to be quite limited. Nevertheless, we feel that, in view of the magnitude of the problem and by the force of existing circumstances, the services of the indigenous *dai,* with such training as she can be made to assimilate will have to be utilized over most parts of the country for many years to come. The type of training that may be given to her will be dealt with presently.

139. At present, instruction in midwifery is given both in English and in the vernacular languages. Courses in this subject vary from nine months to one year in the case of certificated nurses and from 18 months to two years for mid wives. Only four provinces' include domiciliary experience in the training—Madras, the North-West Frontier Province, the Central Provinces and Assam.

140. We are of opinion that midwifery training should be uniform for all nurses, the period of such training being one year for the

fully certificated nurse, whether junior or senior. On the other hand it should extend to at least 18 months for the midwife. In many training institutions, it is required that training in midwifery should form an essential part of the general training in sick nursing. While we value such training and feel that it gives a complete education to the nurse, we must draw attention to the enormous wastage that it involves. This wastage is two-fold. The bulk of those who receive midwifery training do not contemplate practicing midwifery and as a matter of fact avoid it, restricting themselves to the field of sick-nursing. Secondly, many of the nurses trained .in midwifery forget in course of time all that they have learnt and, when actually posted to perform such duties owing to their being technically qualified as mid wives, are found unable to carry them out satisfactorily. In view of the urgent need for training a very large number of mid wives, we suggest that until facilities are available for an increase in the number of training centers, midwifery training should be given only to two classes of people, (a) to the candidates who will follow the profession of midwifery and (b) , to those certificated nurses who will run maternity institutions and hold the more responsible positions in the midwifery practice of the country. Training in midwifery will include training in sick-nursing, elementary anatomy and physiology, as well as in the problems of public health, particularly in their relation to infectious diseases, etc. A suggested course is given in Appendix 41.

141. It is proposed that, as for nurses, there should be two grades of midwives—junior and senior with equivalent basic standards of education. The minimum age for commencing training as a pupil midwife should be 18 years, though intending mid wives will be eligible for the pre nursing courses which we have proposed for inclusion in high school curricula.

142. *Training centers for midwives.*—these require considerable improvement and not all of them deserve recognition. The most serious drawbacks are:

(i) Lack of properly trained and well-qualified supervisory staff;
(ii) Lack of adequate facilities for ante-natal and post-natal work;
(iii) Lack of domiciliary practice and
(iv) Lack of opportunities for witnessing complicated cases of labor.

The present practice of admitting pupils in numbers based upon the annual number of deliveries in an institution is wholly illogical and no institution should be recognized as a training centre for mid wives which does not meet the following fundamental require-ments:—

(i) There should be a minimum number of 500 cases of labor a year conducted within the hospital;
(ii) There should be provision for antenatal cases being treated both in the inpatient and in the outpatient departments, with the minimum number of ten beds available for inpatients;
(iii) In addition to the medical staff there should be a superior nursing staff qualified and experienced in midwifery;
(iv) Proper accommodation for pupil-mid wives should be available in the training centre;

(v) domiciliary practice within easy reach of the hospital training centre should be available, under adequate supervision and with facilities for transport and

(vi) a properly equipped teaching centre with models, diagrams, specimens, and library facilities should be available.

The training can be given either in English or in any of the Indian languages, but if training is given through Indian languages the person who gives this training should himself or herself be a practicing obstetrician holding a senior and responsible post in the hospital. The method, by which teachers in midwifery are appointed, more on the basis of their linguistic qualifications than on their professional attainments, should not be encouraged.

143. *Text-books.*—As in the case of nurses, so also in the case of mid wives, there is a great need for up to date text books. These could be arranged by the Editorial Board, which has been suggested earlier, in such languages as Tamil, Telugu, Canarese, Malayalam,Marathi, Gujarathi, Hindi, Urdu, Bengali, Sindhi, etc.

144. *Revision courses.*—There is little use in making elaborate arrangements for the original training, if no provision is made for refresher courses, which will enable the midwife to learn about advances in her profession. It must not be forgotten that the midwife works largely by herself and often in out of the way places, while the nurse works usually with medical men who help to keep her up to date. It is, therefore, evident that the need of the midwife for such courses is very real and we suggest that they should be arranged at intervals of five to seven years in all training institutions for mid wives and that all mid wives should be required to attend them at those intervals during their professional career.

E. *Dais*

14,3. We have already expressed the view that the continued employment of these women will, for a period, be inevitable. A trained *dai* is obviously better than an untrained one, and a scheme must he elaborated by which it may be possible to get the most effective use out of this type of personnel. For the successful working of such a scheme certain matters require consideration. The *dai,* as the hereditary midwife, has great influence over the people and any plan which fails to secure her active co-operation may stand little chance of success. One of the reasons underlying the hostility shown by the *dai* is the fear that the restrictions that the health authorities may introduce will probably deprive her of the emoluments to which she has been entitled in the past. Another is the feeling of skepticism with which the human mind looks on all innovations. With her conservative outlook and lack of education she finds it difficult to believe that her traditional practice of midwifery is faulty and that the new methods suggested by the health authorities are an improvement on her own. An essential feature of our scheme should therefore be to secure her confidence by dispelling her fears regarding the probable loss of her established rights to certain emoluments and to attempt, only by stages and with a sympathetic understanding of her own background of ignorance and prejudice, to win her over to the adoption of certain necessary changes in her traditional practices.

146. One of us (General Hence) has had considerable experience in developing a midwifery service through trained *dais* in North-West Frontier Province. The first attempt was made in Dera Ismail Khan, Two health visitors were placed in charge of the scheme. The local *dais* was invited to report to the health authority the confinement cases they were called in to undertake. When such reports were made, one of the health visitors went, on each occasion, to the house concerned and attempted, with tact and a sympathetic handling of the *dai,* to improve her practice of midwifery through such simple methods as the washing of hands before assisting in the confinement and the avoidance of interference with the normal course of delivery. For each case that was brought to the notice of the health authority a fee of Be. 1 was paid to the *dai.* It was made quite clear to these women that there was no intention to deprive them of their legitimate income and that the purpose of the health visitors' visits- was to help the *dais* with such advice and guidance as would prove useful to them. Thus, in course of time, there developed an atmosphere of mutual trust and friendly co-operation, which facilitated the starting of the next stage of the experiment.

147. Selected dais were taken for training in midwifery in the local hospital. They were given food, lodging and a stipend during the period of training and, when they went back to work, they accepted! with greater willingness than before the help and guidance of the health visitors in the conduct of the deliveries they had to handle.

The domiciliary midwifery service which was thus developed was based on the hospital, the two health visitors acting as the agents- for carrying out skilled supervision of the work of trained *dais.* Through antenatal and postnatal clinics established at the hospital, health visitors and trained *dais* were encouraged to persuade expect ant mothers and women after childbirth to attend the clinics for suitable advice and treatment. The hospitalization of difficult cases of labor was also facilitated through the co-operation that was established between that institution and the trained *dais.* It will thus be seen that, although in a limited way, a coordinated scheme of institutional and domiciliary midwifery service was developed in the area by utilizing the services of trained *dais.* The success of the scheme was founded on the absence of compulsion and on the enlisting of the interest and co-operation of the hereditary midwife by disarming her of her fears and suspicions regarding the intentions of the local health authority.

148. We understand, from another member of our committee (Dr. Butt), that the attempt to train indigenous *dais* and improve their normal practice of midwifery has been found equally successful in the Punjab.

149. In selecting *dais* for training experience has shown that it is difficult to wean elderly women from their established habits and that the more intelligent among their daughters and daughters-in-law provide suitable material for such training. When devising the course of study it should be borne in mind that *dais* working in urban and rural areas require a somewhat different type of training. in both cases emphasis must be laid on certain common matters, which include the diet in pregnancy, the hygiene of pregnancy, the danger signals to be looked for, the various presentations, the conduct of labor with the minimum of interference and the importance of

giving up certain bad habits of midwifery known to be practiced by indigenous *dais.* The better facilities for hospitalization and for antenatal and postnatal care that towns generally provide point to the desirability of emphasizing, in the training course for the urban *dai,* the need for sending expectant mothers to maternity and child welfare centers for periodical examination and treatment and for advising all women with any abnormality or adverse medical condition to seek admission into hospital for delivery. In the absence of equal facilities for medical care in the rural areas, the training of the rural *dai* should lay special emphasis on danger signals and abnormalities, the precautions to be taken under such conditions, the availability of skilled attention in the neighborhood and the methods of transporting the patient to hospital with the least possible risk to her health. In both cases the training should include the experience of midwifery- under hospital conditions and in the homes of the people. Hospital and home conditions are so different that we consider experience of domiciliary practice essential. We recommend that, during training a minimum of ten domiciliary cases of confinement should be carried out by each *dai.* At first the latter should watch a certain number of such cases conducted by the health visitor and she should later conduct them herself under the supervision of the health visitor.

150. Two essential features of any scheme for a midwifery service through *dais* should be the provision of (1) adequate supervision and (2) facilities for refresher courses. Under our scheme there will be, during the first five years, a dispensary with two maternity beds at the headquarters of each primary unit as well as a 30-bed hospital to serve the needs of four primary units. In the next five years the number of such hospitals will be doubled so that each will serve two such units. We recommend that the training of *dais* should be started on the lines indicated above, at each of the 30-bed hospitals and primary unit dispensaries. The services of the four health visitors attached to each primary unit can be utilized for initiating work on the lines which has been followed in Dera Ismail Khan. Such preliminary work directed towards winning the confidence of the local *dais* is of the utmost importance. Later, a combined institutional and domiciliary service for mothers and children can gradually be developed, the 30-bed hospitals and the dispensaries with their maternity beds taking their share in the proposed programme. The women doctors attached to the primary units and the health visitors can take a prominent part in the development and maintenance of such a service.

151. In British India the annual number of births is probably in the neighborhood of ten millions and, even if a proportion of this large number of expectant mothers is to receive skilled attention during pregnancy and childbirth, the need for enlisting the services of the indigenous *dai,* as an interim measure, cannot be over-emphasized. It is recognized that, even after such training as she may be given, the *dai* is not likely to prove as satisfactory as a qualified midwife and that the danger of such an imperfectly trained person is that she may lapse into her old and undesirable habits. One of the reasons for such return to old habits was, in the past, the inadequacy of provision for supervision over the work of trained *dais.* The four

health visitors working in the relatively small area of a primary unit should be able to provide a much higher degree of supervision than could be exercised in the past. Another method of ensuring a reason able measure of efficiency is by providing refresher courses for dais,. Such training should be available at least at intervals of two years. The 30-bed hospitals and the dispensaries with their maternity beds will have to perform this function also.

152. We must emphasize, at the same time, the need for proceeding with the training programme for mid wives on the lines indicated by us. The purpose in view is not, however, to deprive the *dai* of her hereditary profession through her replacement by trained midwives from other classes of the community. We believe that with the development of the postwar educational programme, most of the younger women of the *dai* community will, within the next fifteen ' or twenty years, become sufficiently educated to qualify themselves for the full course of training prescribed for a midwife. The programme of *dai* training described in the previous paragraphs, with its special emphasis on a sympathetic understanding of the existing disabilities of these women, will also have helped, it is to be hoped, to turn large numbers of that community into active collaborators with the health department in the provision of midwifery service to the people. In these circumstances what we anticipate is that increasing numbers of the younger women of the *dai* community will become available, as the years go by, for the complete training of a qualified midwife and that these will form the vast majority of those who are employed in the State midwifery organization. Thus the objective we have in view is the upgrading of the existing class of hereditary workers in the field of midwifery in the country in to fully trained and efficient workers.

153. The subjects of control over the standards of training required for nurses, health visitors and mid wives and of their control from the professional point of view have been discussed in Chapter XXII(c).

F. Nursing Orderlies and Ward Ayahs

154. At present no regular training is given for these workers. It is very desirable, however, that they should be given an elementary understanding of the principles of hygiene, the cause and spread of disease and the methods to be employed for protecting them selves and others. They should be instructed also in the routine and non-nursing duties of a nurse, and should be capable of relieving the latter in the carrying out of these, so that she may be more usefully employed on her professional duties. At the same time, they should in no case be taught, or expected to give, nursing attention to the sick.

(VI) HOSPITAL SOCIAL WORKERS

155. Hospital social service brings to the care of the sick in institutions such knowledge of their social conditions as will hasten and' safeguard their recovery and help to prevent any recurrence. Such knowledge enables those responsible for their treatment to under stand and treat the patients illnesses more effectively. In the carrying out of her duties the medical social worker has become, in fact, an assistant to the physician in the diagnosis and treatment of disease.

156. The medical social worker is comparatively a new comer in the field of medical service. She is called upon to use her professional skill and knowledge in efforts to effect desirable changes in the relationship of the patient and his physical and human environments. She is also being increasingly recognized as an essential professional colleague of the physician in the analysis and treatment of the physical and emotional disturbances of his patients. When the physician discovers or suspects the existence of social maladjustments it should be his duty to refer the case to the social worker, defining for her the specific social and emotional disturbances which he suspects to be holding up effective treatment.

157. The duties of a hospital social worker may therefore be divided broadly into two main sections, the one constructive or positive, and the other negative or semi-negative, and in a summarized form they may be stated as follows (Stone—*vide infra)*: —

(a) Discovery and making available to the medical staff any factors in the patient's environment that may have any bearing on his physical condition, thus supplementing medical history by social history. This would include any facts of heredity, personality, manner of life, home environment, worry about finances, dependents, character of employment and strains and hazards incidental thereto recreations and standard of living generally, or shortly all facts that may influence diagnosis and affect the plan of treatment.

(b) Influencing and guiding patients in carrying out treatment by making the physician's directions simple and concrete, and helping them to carry out the plan of treatment through to completion.

(c) Overcoming obstacles to successful treatment or recovery particularly in the out-patient department, and during convalescence. Under this head also, it may be necessary to see that medical and surgical supplies (instruments, spectacles, teeth, etc.) are secured; that social or economic conditions affecting the patient adversely are corrected, and that as far as possible a situation favorable to recovery is secured. This last may mean new employment, temporary financial assistance, relieving patients of responsibilities for care of children, special assistance with food, etc. It will also include the provision of sanatorium or convalescent treatment where advised by the medical staff.

(d) Arranging for supplementary care of patients. This is the positive side of this second requirement and is treated Tinder heading number 3. This and the next duty will require a thorough knowledge of the powers and duties of all the available social and health agencies of the country.

(e) Educating the patient in regard to his physical condition in order that he may better co-operate in the programme laid down by the physician this programme providing not only for the cure of illness, but the promotion of

health with a view to the prevention of illness. Without this service much valuable and expensive treatment would be wasted because of its ineffectiveness.

(f) Discussing with patients their resources, and collecting, if required to do so, their contributions towards the cost of the treatment given.

(g) Checking the abuse of hospitals, both as to out-patients and in-patients, who on examination are found to be

(i) in a position to pay for treatment;

(ii) Persons insured under the National Health Insurance Acts, entitled to the Services of a panel doctor, and not requiring special hospital treatment.

(iii) Beyond the power to benefit by any assistance other than that obtainable through the Public Assistance Committee.

158. It is evident that in any progressive scheme for the development of Social Medicine along these lines, it is essential that workers of this type should be brought under active instruction as quickly as possible. The chief difficulty at the moment is to obtain any adequate training in India. It is a training which cannot be undertaken by amateurs, or by the method of trial and error.

159. An attempt has been made at the Sir Dorabji Tata Graduate School of Social Work in Bombay to develop courses for social workers, and we have had the benefit of discussion with the Director of that school. It appears that the two year graduate courses at present being given, in addition to the pre professional and general courses, cover the following: —

(1) Family and child welfare.
(2) Juvenile and adult delinquency.
(3) Industrial relations and labor problems.
(4) Administration of social work.
(5) Medical lectures for social workers.
(6) Medical hygiene and psychiatry for social workers.
(7) Social and family case work.

These courses as they stand are too specialized and restricted and would require considerable modification and expansion in order to meet the needs of a hospital service.

160. For the guidance of those who will have to devise suitable courses for India in this important department reference should be made to the following authoritative works:

(1) 'Hospital Organization & Management' by Captain J. E Stone—chapter 22 and
(2) 'Hospital Organization & Management by M. T. MacEachern—chapter 12.

161. The training of a hospital social worker is the same whatever the field in which she will eventually work, but Psychiatry is no exception. The education of a psychiatric social worker requires a different training and different examinations. In addition to the general training referred to above a candidate must spend an extra year in specialized training. The main functions of such workers are

described in the Interim Report on Social and Preventive Medicine by the Royal College of Physicians (October 1943) as follows: —

(1) To obtain social histories by means of which the psychiatrist is enabled to see the patient more clearly against his domestic and wider social background.

(2) To ensure that the patient's relatives, or others close *to* him, provide as far as they can the psychological and' material environment judged necessary to further his recovery and maintain his mental health.

(3) To bring the resources of the community to bear on the patient's needs, *e.g.,* by referring some of his problems, to employers, relief agencies, social clubs, etc, which can help him, and by aiding him to make the best use of the available facilities.

(4) To ease by after-care the difficult transition, from more or less dependent patient to self-reliant member of the community.

(5) To carry out systematic social investigations needed for assessing the causes of good health and illness, the effectiveness of treatment, or other matters of medical and social import.

(6) To educate the public—incidentally, in the course of her work—to take a sensible attitude towards mental health she is well-placed to do this, and is a fitting intermediary. Teaching the public to discard harmful prejudices and to act promptly to nip illness in the bud will be the special worker's business as well as the doctor's.

162. We consider it extremely desirable that suitable persons should be sent without delay to foreign countries where this branch of health work is receiving special attention, in order to acquire the necessary training and to study what is being done in those countries. On their return to India, they should be employed in initiating training schools for hospital social workers.

(VII) THE TRAINING OF TECHNICIANS

163. In the great advance of medical science in recent years the need has increasingly developed for a large ancillary army of workers to assist the medical practitioner in those technical details and processes which would otherwise fritter away his energies-, and in order to allow him adequate time to devote himself to the more strictly medical aspects of his profession. These technicians, who form a highly specialized group of personnel, may be broadly classified under the following heads: —

(1) Laboratory technicians.
(2) Radiographers.
(3) (a) Occupational therapists
(b) Physical therapists.

164. In India courses of training have not reached an adequate standard except in Madras, though several Missionary institutions

have made a beginning in this direction—notably the Christian Medical Association of India, which has instituted a training school at Union Mission Tuberculosis Sanatorium, Arogyavaram.

165. In the U. S. A. the training of occupational and physical therapists and of clinical laboratory technicians is governed by the Council of Medical Education and Hospitals of the American Medical Association. According to the last published report (Jl. Am. Med. Assoc. March 22, 1941) every physical therapist technician had, in that year, an average of 12 months training in addition to a preliminary qualification either as a physical educator or as a nurse, and 275 students were in training in 15 approved schools. There were, at that time, some 200 schools training clinical laboratory technicians. In China training schools for technicians have been in operation for the last 20 years with 6—12 months courses in laboratory techniques. In Russia there has been an increasing demand for this type of personnel, trained in a one year course. A unique feature of the Russian technetium is that individuals who complete a technical course for a specified period and, at the same time, satisfy the requirements of a medical worker's faculty which is designed to train daily workers for higher education, may proceed to study for a medical qualification.

Laboratory Technicians

166. The laboratory technician or medical technologist has been defined as "a person who by education and training is capable of performing the various chemical, microscopic and bacteriological tests used in the diagnosis and treatment of disease under the supervision of a qualified physician or clinical pathologist."

167. Schools for the training of such technicians should be organized by universities, colleges of medicine, well-equipped hospitals and public health laboratories. The responsibility for training in hospitals should be placed on the hospital administrative staff, while in the colleges and universities this responsibility should be laid upon the controlling Board. Every such school should have a competent teaching staff, the Director of which should be a graduate in medicine and a pathologist of recognized ability who should take part in. and be responsible for, the actual conduct of the training course. Not more than two students should be attached for laboratory practice to each senior member of the teaching staff of each department.

168. Laboratory technicians may be trained either in the Departments of Anatomy or Physiology of a Medical School, or in the Departments of clinical laboratory sciences, Pathology, Bacteriology and Pharmacology. Each student should receive practical training, adequate in kind and extent under competent supervision in a hospital laboratory. Such a hospital should have a minimum of 2,000 admissions, and an average of 15,000 tests and examinations carried out in the laboratory department annually. Adequate space, light and modern equipment should be provided in the Laboratory department, while there should be a library with up-to-date reference books and periodicals. A satisfactory record system should be provided for all work carried on in the Department. Candidates for admission should preferably be persons who have completed the Secondary School Leaving Certificate or the Matriculation examination with Science as one of the compulsory subjects of study.

169. A laboratory technician may qualify himself in either of the following two groups—

(1) Anatomy and Physiology (for work in those departments).

(2) Pathology, Bacteriology and Biochemistry (for specific laboratory work).

The period of instruction for each of these groups should be two years. Courses considered suitable for this purpose are detailed in Appendix 42.

Radiographers

170. The radiographer assists the radiologist in a manner similar to that in which the dental hygienists assist the dental practitioner. He sets the radiologist free in fact for the finer details of his specialized practice.

171. The training of this type of personnel has, naturally, to be undertaken in an Institute or Department of Radiology and Physic electric therapy. The standard of entrance should be the Intermediate Science, preferably with mathematics or a pre degree examination of an analogous standard. A suitable course of training designed to extend over two years is set out in Appendix 43.

Examinations

172. An examination should be held at the end of each year's course. The examiners should be appointed by the examining body, which should issue certificates to the successful candidates after the completion of 2 years' course. It is desirable that no examination fee should be charged. If this is not possible, then only a nominal fee of Rs. 10 or less, depending on the conditions prevalent in a province, should be paid by the candidates.

In the case of both the above classes we propose that the Examining Body should be a Board constituted by either the Ministry of Health or by the Administrative Medical Head of the Province.

Tuition Fee and Caution Money

173. No fee should be charged for the training, but the candidates will have to deposit caution money of Rs. 50 in the case of a laboratory technician and Rs. 100 in the case of a radiographer. This exemption from the payment of fees is suggested in consideration of the fact that candidates will be doing work for the department during the course of their training.

Registration

174. Adequate consideration must be given to the question of registration of these technicians and, as a guide to the establishment of such a register, an extract is given as Appendix 44 from the 10th edition of a booklet describing the function of the Registry of Medical Technologists of the American Society of Clinical Pathologists.

Occupational and Physical Therapists

175. There are at present no regular arrangements for the training of such therapists in India. It is very desirable that schools should be established at an early date which will supply adequate

training in the rehabilitation of the sick. We do not feel that, at this stage, we can offer any concrete proposals for such training but suggest that, in the near future, experts from abroad, if necessary, may be brought to India temporarily, and also that selected persons with adequate qualifications may be sent abroad to study the problem with a view to the establishment of schools and courses of training suitable to the needs of this country.

As a guide to those who may have to organize these courses we have included in Appendix 45 of the set-up proposed by the Council on Medical Education in Hospitals of the American Medical Association for schools for occupational therapists, physical therapists and clinical laboratory technicians.

CHAPTER XIX

MEDICAL RESEARCH

Introduction

1. A study of the present state of existing institutions, which is fully set out in the survey section of our report, will show quite clearly how great is the need for the improvement, expansion and development of medical research in India in all its branches. The outstanding defect at the present time is the almost complete absence of organized medical research in the various departments of the medical colleges. It is true to say that, apart from a few noteworthy exceptions, research in these institutions has been very badly neglected. The chief factors concerned are : (1) ignorance on the part of the authorities of the importance of research in relation to the maintenance of a high standard of teaching and the development of the right attitude of mind in the student; (2) insufficient personnel of the right type; (3) the prevalent practice of employing part-time teachers especially for clinical subjects and the consequent necessity for teachers to engage in private practice in order to make a reason able living; (4) insufficiency of suitable equipment and, in some cases, lack of adequate accommodation and (5) inaptitude for, or lack of interest in, research on the part of many of the teachers employed. No proper facilities exist in India for training the young, alert minds of the country in a scientific approach to medical matters and this lamentable deficiency probably accounts for the indifferent attitude to research on the part of many of the teachers in medical colleges.

2. Organized medical research in India at the present time depends to a large extent, on the Central and Provincial Government institutes, on the small cadre of officers of the Medical Research Department and on the Indian Research Fund Association, which has hitherto functioned mainly through the agency of these officers and institutes. The opportunities for the conduct of research in Central and Provincial Institutes have diminished progressively in direct proportion to the increase in volume of the routine duties which' they have been compelled to undertake, usually without any corresponding increase in staff. The Central Research Institute, Kasauli for example, was originally constituted for the primary purpose of undertaking investigations both in the laboratory and in the field but it has been compelled to undertake such a heavy burden of routine work that, in recent years, research work has become, at best, a spare-time activity of enthusiastic individuals. In fact research on any appreciable scale has been possible in recent years only when additional personnel, material and equipment have been made available through grants-in-aid from the Indian Research Fund Association. The same trend has been apparent in most of the Provincial institutes. It is important fully to realize this throttling effect of routine work on research even in laboratories in which research was intended to be the primary function. There are at present few facilities for post-graduate training in teaching and research in medical subjects. Such as are available are centered chiefly in the Calcutta School of Tropical Medicine and the All-India Institute of Hygiene and Public Health.

3. The opportunities available in India for the investigation of many medical and public health problems are as good as, if not better than, those in almost any other country. It is true to say

that, in the past, India has been in the forefront on such major health problems as malaria, cholera and kala-azar and has taken a prominent part in the investigation of such other important problems as rabies, plague, leprosy, the dysenteries and nutrition. Nevertheless, the achievements of the past have not been commensurate with the unequalled material available for research or with the -pressing needs of the country.

4. While it has been freely admitted that the Indian Research Fund Association has fulfilled a useful function within the limits imposed by the financial resources at its disposal, it is generally felt that research as at present organized is narrow and restricted, and that there is an urgent need not only for it to be organized on a broader basis but also for making funds much more freely available for research work. Hitherto the Indian Research Fund Association has been the chief organization in India which has subsidized research. The amount of money available for distribution has been only about Rs. 4 lakhs per annum, an allocation which is considered to be miserably inadequate to meet the needs of medical research in a vast sub-continent- Provincial Governments, with a few exceptions, have taken little interest in medical research and have not been prepared to spend money on it.

5. Within recent years great advances have been made in India in. the production of pharmaceutical and biological preparations by private enterprise. It may be accepted that some of the firms engaged in work of this kind are already well established although the standards so far achieved, at least in so far as the preparation of biological products is concerned, are not, in all cases, entirely satisfactory. It is apparent however, that this trade has come to stay and it will be wise to foster and encourage it with such safeguards as are essential to protect the public interest. India provides a vast market for preparations of this kind and, if this young industry is carefully nursed it should eventually be able to meet most, if not all, of the requirements of the country.

We shall now proceed to examine the possibility of remedying these defects and to make proposals for future development.

I. Organization of Medical Research in India

6. The criticisms made of the existing organization for medical research in India have already been cited. Organizations for medical research in other countries were examined in detail including the Medical Research Council in Great Britain, the National Medical Research Council in Canada, and the National Research Council in the United States all of which have contributed greatly to the furtherance of medical research in their respective countries. A common feature of all these organizations is that they enjoy great latitude in the formulation of their research policy and complete freedom in the disposal of the funds allotted to them. We are unanimously of the opinion that in India some similar central body for medical research is essential. We consider that this should .be constituted as *a* separate autonomous organization unfettered in the formulation of its research policy and vested with full powers to hold and disburse moneys allotted to it from public funds, or placed at its disposal by private benefactors. We recommend the constitution of a statutory organization consisting of: —

(1) a Scientific Board, which would be the executive machinery of the organization and

(2) an Administrative Body which would form the link between the Board and the Government of India and exercise general super vision over the working of the organisation.

(1) The Scientific Board

This Board would undertake the executive responsibilities of the organization for the furtherance of medical research. The Board should include the following.—

(a) Medical research workers of standing and experience-

(b) Representatives of universities and medical colleges.

(c) Representatives of the principal scientific bodies in India.

(d) Prominent workers in the field of public health and clinical medicine.

(e) Non-medical representatives of allied and fundamental sciences.

(f) Persons with experience of health administration.

The work of this Board should be aided by the formation of an adequate number of expert advisory committees for special subjects.

(2) The Administrative Body

We suggest that it should have the following type of membership:

(a) The Minister of Health in the Central Government.

(b) Representatives of Government Departments for Agriculture, Industry, Labor and Finance.

(c) One representative of the Council of State.

(d) Two representatives of the Legislative Assembly.

The Director General of Health Services with the Government of India should be in attendance at all meetings of this body.

The Board would make recommendations regarding the allocation of funds for the furtherance of research to the Administrative Body, in which would be vested the power of giving sanction to such allocation.

(3) A whole time Secretary specially selected for his scientific eminence, organizing ability and driving power should be appointed for this statutory organization.

The majority of us consider that, if a National Research Council of India should be formed at some future date, the proposed central organization for medical research should become a Division or Board of this Council, though some of us are of the view that, though the closest liaison with it should be established, the question of ultimately incorporating the research organization in the National Research Council might be left for decision at a later date.

The functions of the central medical research organization pro-above would be: —

(a) Formulation of policy in regard to the future development of medical research in India and the co-ordination of all medical research activities.

(b) Stimulation of research activities in universities and medical colleges and arrangements for exchange of associate Professorships with this end in view.

(c) Responsibility for the selection and training of medical research workers.

(d) Constitution of an adequate number of expert advisory committees for special subjects.

(e) The promotion of research programmes and the allocation of funds for, or in aid of, their conduct.

These functions would be exercised by the Scientific Board constituted as in (1) above under the general supervision of the administrative body constituted as in (2) above. We also recommend that the Indian Research Fund Association should be merged into the Central Medical Research Organization now proposed.

II. Medical Research in Teaching Institutions

7. Postgraduate Teaching Institutions—

There are only two highly-organized and developed medical postgraduate teaching institutions in India at the present time, namely, the Calcutta School of Tropical Medicine and the All-India Institute of Hygiene and Public Health, Calcutta. In each of these, advanced' courses of instruction, as outlined in Vol. I of this report, are given and research work of a high order is regularly carried out. Both are-capable of further development and the lines on which this should in our opinion, be carried out are given below: —

(a) *School of Tropical Medicine, Calcutta.*—This School is for all practical purposes an All-India Institution and it should therefore be largely, if not wholly, a Central Government responsibility. At the present time students, teachers, research workers and patients are drawn from all parts of India and even from beyond its frontiers. Up to now the Government of Bengal has met the greater portion of the expenditure incurred, although much of the money available for research work has been derived from other sources, in particular from industrial concerns, from the endowment fund of the School and from the Indian Research Fund Association.

The work of the School is at present greatly handicapped by lack of sufficient accommodation. The various departments are so overcrowded that their research activities are impeded and it would be virtually impossible to accommodate any appreciable number of postgraduate students. For this reason, training facilities of an exceptionally suitable nature are denied to many potential teachers and research workers.

At the present time, the work of the School is decentralized into nearly twenty so-called departments, each of' which covers only a very limited sphere of work. This has the disadvantage that, from the point of view of training young graduates, individual departments do not afford a sufficiently broad basis for training purposes, and furthermore research work on narrow specialties is liable to be carried out in water-tight compartments. It is true that the Professor of Tropical Medicine acts as coordinator of research, but it would probably be more satisfactory if research work was coordinated after several of the departments had been amalgamated under better and more direct supervision.

There are very strong reasons for retaining the School and its associated hospital in its present location and there is an urgent necessity for greatly increased accommodation to allow of the proper

conduct, and of the further development, of the work of the School. Unfortunately the possibility of providing increased accommodation on the present site appears to be remote as there are no vacant sites in the immediate vicinity. The most obvious remedy would be for the School to take over the large, modern and well-equipped laboratories at present occupied by the All-India Institute of Hygiene, which is situated immediately adjacent to the School. This would provide immediate relief for the present congestion and would leave room for future development for many years to come. As a first step in placing the School on an all-India footing, it would be fitting if the Government of India were to gift these buildings to the School. This would, of course, entail the provision of new accommodation for the Institute on an equivalent, or preferably more generous scale elsewhere.

Given suitable personnel and the opportunity to expand by providing improved and enlarged accommodation, the School may safely be left to develop into a centre for teaching and research on tropical medicine second to none in the world. As has already been pointed out, the clinical material and other facilities available are unparalleled. The fullest use should be made of these facilities in developing centers for the training of teachers and research workers.

We emphasize the need for additional organizations of this kind at other important centers in India.

(b) *All-India Institute of Hygiene and Public Health.*—The All-India Institute of Hygiene and Public Health is much less overcrowded, and is organized on a much broader basis than the Calcutta School of Tropical Medicine. If all the accommodation in the Institute buildings were made available to the legitimate departments of the Institute, space would be sufficient for present needs. The Institute has hitherto failed to fulfill one of the primary functions for which it was established, namely the investigation of methods of applying knowledge of medical protection to large community groups. Recently, a collaborative scheme between the Government of India and the Government of Bengal has placed under the control of the Institute a large area near Calcutta where opportunities will be available for investigations of this kind. The research activities of the Institute should be directed to the solution of problems of two main types. In the first place, research is required in order to develop effective methods of public administration best suited to the social and economic conditions prevailing in India. In the second place, the development of such methods will raise problems for the elucidation of which knowledge is not at present available and research will therefore be required. For example, the provision of a safe water supply must be based on proper water standards for the working out of which collaborative research between the sections of microbiology, chemistry and epidemiology will be necessary. The investigation of efficient methods of applying knowledge may well raise other problems for the solution of which the co-operation of other institutes such as the departments of the natural sciences of a university may be required. The evolution of the present methods of controlling yellow fever provides a classic example of the necessity for collaboration with the pure physicist. in brief, the chief research activities of the Institute should be directed to the solution of problems of administration designed to facilitate the adoption of practical recommendations

by the most efficient methods. The Institute would thus serve as a staff college for administrative health officers.

8. Medical Colleges

In order to rectify existing conditions in the medical colleges of India as regards the conduct of research work, a drastic overhaul will be necessary. This is a matter which concerns, primarily, professional education. A complete change of outlook towards research in the various departments of the medical colleges in India must be achieved, and a greatly increased number of properly trained workers must be provided in order to establish active research centers in the medical colleges. This subject is discussed in some detail in the section of this report dealing with the recruitment and training of medical research workers, but may be summarized here as follows: —

(1) The importation, for short periods of medical research workers of recognized standing

(2) The appointment of associate professors, financed, if necessary, by the Central Medical Research Organization, to conduct and stimulate research.

(3) Exchange professorships.

(4) The provision of scholarships for selected young workers including promising young graduates in the basic sciences.

Primary requirements in establishing research centers in the medical colleges are: an increase in the number of properly trained personnel; the retention of whole time workers the provision of adequate emoluments; liberal provision for study leave; the prohibition of private practice and the provision of better accommodation and equipment.

In our view the departments of the medical colleges, both clinical and pre clinical, provide the most favorable and most desirable location in which to establish research centre's.

III. The Recruitment and Training of Medical Research Workers

9. We recognize that the number of suitable medical research workers and the facilities for training- them are at present inadequate in India, and that before any expansion of medical research can be undertaken, the primary requirement will be a great increase in the number of properly trained workers available. No extension of medical research will be possible until this requirement is met.

10. We consider that responsibility for recruiting medical research workers, and for the creation of training centre's for them, must be a primary function of the central organization for medical research, and that this function should be freely exercised at the earliest possible moment. The following methods are recommended to achieve this end: —

(1) The provision of scholarships to facilitate the training of young workers in the universities, medical colleges and other laboratories and institutions in India, in numbers up to the capacity of these institutions to train them adequately. Promising young science graduates who might eventually be suitable for medical research work but who are unable to meet the expenses of a

medical education, should be given scholarships for this purpose or directed into lines of work in which their training may enable them to take up research on subjects allied to medical research, with the necessary financial and other assistance.

(2) To facilitate such training, the services of workers of recognized standing in different branches of medical science should be obtained for short periods for attachment to suitable medical institutions. The duty of these workers will be to conduct research on selected subjects in which young scholars and graduates would be associated.

(3) The provision of an adequate (and annually increasing) number of scholarships for young Indian graduates (medical and non-medical) tenable abroad for a period up to three years, to enable them to receive advanced training in special fields of study. Candidates for this type of scholarship might suitably be selected from amongst those trained as suggested in (1) and (2) above. Those selected for scholarships for training abroad would be required to devote their energies to acquiring specialized knowledge of the subjects in which it was intended that they should be employed on return. They should not acquire academic degrees or diplomas without the express sanction of the sponsoring authority.

(4) The formation of active research centers in universities and medical colleges in India by the appointment of associate professors, selected by the Central Medical Research Organization, for the express purpose of providing facilities for the advanced training of senior students and graduates, so as to interest them in, and fit them for, research careers.

11. We recognize that medical graduates are unlikely to undergo the necessary training for a research career unless subsequent employment in such work can be secured for them and consider that arrangements for this must be a further responsibility of the Central Medical Research Organization which has selected the graduates-and has arranged for their training. We therefore suggest that, in consultation with the authorities concerned, subsequent employment might suitably be arranged in (1) the proposed All-India Medical Institute; (2) a Central or Provincial laboratory or institute where their services could be suitably employed; (3) a university or medical college as associate professors or research workers; and (4) any suitable field of medical or public health work in which their training and experience would be of value.

12. The Central Medical Research Organization must, where necessary, be prepared to meet the emoluments of trainees until such time as they are absorbed into regular employment, or have ceased to be productive in the field of research.

13. We recommend that the terms and conditions offered to medical research workers should be such as to provide reasonable security and to ensure freedom from financial worry it is not recommended that workers should enjoy such a degree of permanency as might

tend to foster indifference and lack of effort. Adequate scales of pay with provident fund benefits are recommended, and continued employment should be given to all who retain their capacity for fruitful research. Work should be subject to periodical review and in those cases where a worker has lost his powers of original work, his services should either be dispensed with at the conclusion of his contract, or, if he is otherwise an industrious and efficient worker, every effort should be made to find him employment of a more routine nature so far as this may be possible.

14. Although we have dealt with the question of training teachers and research workers in various branches of medicine in other places in this report, we may set out here certain principles which should govern the development of provision for such training.

Objective.—The object should be to develop teachers in the various branches of medical science whose competence is based on personal ability, and experience gained through teaching and independent research in their own fields.

Selection of Trainees.—Trainees should be selected from distinguished graduates in medicine or graduates in science, with honors or post-graduate qualifications, and should be chosen by a personnel selection board on lines now employed by the Army Medical Service—primarily on a basis of aptitude for, and attitude to, scientific studies. A satisfactory health record should be essential for acceptance.

Science graduates should be eligible for training in the pre clinical fields and may be required to attend courses in selected medical subjects for orientation.

Medical graduates who have completed their curriculum, except for the intern year, should be eligible for training in the pre clinical fields if the intern year has been spent in the department concerned.

15. *The Course of Training.*—We recommend that the minimum period of training should be four years including the intern year. Science graduates should **enter** training as interns in the department concerned. In the case of those who have already had experience of teaching, the period of training may be of shorter duration. The details of the course of training recommended are outlined briefly in Appendix 46.

16. In order to implement the suggestions made above we specifically recommend: —

(1) the creation of an All-India Medical Institute,

(2) the establishment of post-graduate training institutions in different provincial centers for subjects which will not be included in the programme of the All-India Institute, and

(3) The development of a number of teachers training departments as a short-term policy to initiate postwar development.

As regards (1) and (2) our specific recommendations have been set out elsewhere in this report-

We consider that immediate action should be taken to make possible all the three recommendations set out above.

IV. The Future of Medical Research in Existing Government Institutes and Laboratories

17. Existing institutes and laboratories under the Central and Provincial Governments have fulfilled important functions in the past and we recommend that these should not only be continued but extended.

18. It has been the universal experience in India that research in the Central as well as in the Provincial institutes has been progressively encroached upon by an ever-increasing volume of routine work. We therefore consider it imperative that any institution created for the special purpose of undertaking basic research should at all costs avoid acceptance of responsibility for routine work of any kind. The existing Central Research Institute at Kasauli has now become little more than a centre for the manufacture of biological products and it is recommended that work of this kind should continue to be carried out at this Institute together with applied research in relation to this primary function and certain other routine functions, which will be considered more fully below

19. The existing institutes and laboratories in the Provinces also have heavy routine duties to perform and these are likely to increase in the future. In the Presidencies of Madras and Bombay, the scope and functions of the King Institute and the Affine Institute respectively have increased progressively over the past forty years. The stage has now been reached in both of these Presidencies when there is an urgent need for decentralization of some of the functions of the main institutes by establishing regional laboratories at selected centers. These laboratories should be affiliated to the parent institute and should undertake only those functions which it is desired to decentralize as for example, diagnostic laboratory work for hospitals and practitioners, and public health laboratory work such as the examination of water, foodstuffs, etc., as required by the (public health services. Other functions such as the manufacture of biological products should continue to be the responsibility of the parent institute. The accommodation and facilities available in the existing institutes should be improved and expanded to permit of the conduct of research work on a larger scale than is at present possible, and to allow of the training of personnel in routine and research methods. Regional laboratories should be planned to allow for expansion of the routine duties allotted to them and to provide sufficient accommodation and equipment to enable them to undertake research, especially research of a clinical nature. A more detailed consideration of the future of the existing and proposed laboratories in the Presidencies of Madras and Bombay will be given in later sections of this report.

20. In some Provinces, existing institutes and laboratories are in adequate for present day needs and in some there is little or no provision for work of this kind. In Bengal, for example, the Government has made provision for the conduct of routine public health I laboratory work and for the manufacture of essential biological products in piecemeal fashion. The existing laboratories are considered to be totally inadequate for the needs of the Province and us

recommend the creation of an Institute of Preventive Medicine in Bengal on the lines proposed for the future development of the King Institute, Guindy or the Haffkine Institute, Bombay. In addition to a new institute of this kind, adequately staffed, constructed and equipped on modern lines, the creation of subsidiary regional laboratories at selected centers throughout the Province is recommended.

21. In other Provinces, such as the Punjab and the United Provinces, provision for public health laboratory work, clinical diagnostic) work and the manufacture of essential biological products are barely sufficient for present-day needs, and we recommend that the existing public health laboratories in these Provinces should be improved and expanded on the lines indicated above, and ultimately de-centralized in a manner similar to that proposed for Madras and Bombay. In those Provinces and Indian States where few, if any, facilities at present exist for work of this kind, new institutes will be required.

22. One of the primary functions of the main institutes in the Provinces, whether existing or proposed, will be to undertake the large-scale manufacture of primary public health requirements of vaccines, sera and other biological products. This does not mean that Government laboratories need come into competition with commercial firms already engaged in the large scale manufacture of biological, since the latter are engaged chiefly in the preparation of products required by hospitals and practitioners throughout the country rather than those of primary public health importance such as prophylactic. Vaccines, vaccine lymph, etc

23. We recognize that the manufacture of biological products by commercial firms in India is an industry which is now well-established and one which, at the present time, is making rapid progress. There are already numerous firms in Bengal, Bombay, the Punjab and Kashmir. As a rule, the manufacture of biological preparations is undertaken by firms engaged also in the manufacture of other products such as pharmaceutical preparations. We also recognize that some of the leading commercial firms in India have already made great strides towards the production of biological preparations under more satisfactory conditions than was formerly the case. Two of us (Drs. Vishwanath and Butt) are of the opinion that the time has now arrived when- the manufacture of such products should be a responsibility of commercial firms under sufficiently strict Government inspection to ensure public safety. The others, while taking due note of recent developments in the manufacture of these biological products by commercial firms, consider that the interests of the people should come first so far as essential medical requirements, including such biological, are concerned. The large scale production of basic prophylactic preparations, such as cholera, plague, T. A. B. vaccines, vaccine lymph and anti-rabic vaccine is of paramount importance to public health authorities in India in protecting the people against epidemics. It is therefore considered that their production should remain a Government responsibility. So far as the requirements of these products of non-governmental agencies are concerned, Governments should make' these products available at cost price or even below the cost of manufacture, where necessary.

The views of our colleagues on this and certain other points are sell out in a note which is appended to this chapter.

24. The following specific recommendations are made in regard to the existing Central and Provincial Government laboratories.

Organizations Financed by the Central Government

26. (a) *The Central Research Institute, Kasauli.*—This institute was originally designed to fulfill the functions which its name implies but it has been compelled to accept the responsibility for an ever-in-creasing volume of routine work, particularly the large-scale production of vaccines and sera. Nevertheless a large amount of important research work has been carried out at the Institute, some of it having a direct bearing on improved methods and procedures for the manufacture of biological products. We recognize the need for a model biological station maintained by the Central Government and we consider that the existing Institute at Kasauli would, with certain modifications and extensions, provide a suitable location for such a station, the primary functions of which would be (1) to manufacture *a* representative series of biological preparations under optimum conditions so as to provide an ideal standard for the trade; (2) to carry out applied research, particularly in regard to the evolution of newer and better products and of improved methods for their preparation; and (3) to provide a training centre for expert technical personnel in work of this kind. We consider that Government cannot reasonably enforce the provisions of the Drugs Act (1940) and demand a standard of manufacture by commercial concerns which they themselves cannot demonstrate In addition to the routine functions at present being performed by the Institute and those proposed above, provision should also be made at the Institute for a permanent Serum Standardization Section.

26. The present buildings and equipment of the Institute at Kasauli are in most respects satisfactory for the work in progress but there are certain serious defects which would require' to be rectified before the Institute could become a model biological station with facilities for applied research. Apart from the many facilities already available at Kasauli, the climate is ideally suited for breeding and maintaining animals under very favorable conditions. The Kasauli 'Institute possesses a fine library and would make an ideal centre to which research workers from the plains could recess during the hot weather for the purpose of preparing reports, papers for publication, etc.

It is suggested that the name of the institution be changed into the Central Biological Products Laboratory.

27. (b) *The Malaria Institute of India,*—Recommendations as to the future role of this Institute are given in the section of this report which deals with researches on special subjects.

28. (c) *The Biochemical Standardization Laboratory.*—this laboratory forms the nucleus of the proposed new Centre Drugs Laboratory We recommend that the latter should be constituted at the earliest possible date. We recommend that provision should be made in the new Central Drugs Laboratory for the conduct of research of an applied nature relating to the evolution of newer and better methods of assay:

Organizations Financed by Provincial Governments

29. The survey of existing institutes and laboratories given in Vol. I of this report shows that some of these are good *(e.g.,* King

Institute, Madras and Haffkine Institute, Bombay); some are barely sufficient for present needs *(e.g.,* the laboratories in the United Provinces and Punjab); some are poor *(e.g.,* the laboratories in Calcutta) and that in some Provinces none exist at all. We recognize the value of well-developed institutes of preventive medicine in relation to public health work in the Provinces and emphasize the need for at least one modern, well-equipped and adequately staffed institute of this kind in each Province in the first instance. As progress is made, it will be necessary to create additional institutes and laboratories at other centers throughout each Province so as to de-centralize most of the functions of the parent institute. Proposals on these lines have been put forward by the Directors of the King Institute and the Haffkine Institute for the Presidencies of Madras and Bombay respectively, and so far as they go these proposals have our full support. It is felt, however, that these proposals represent an immediate necessity and that even if they were implemented in full, the end-point, in the provision of laboratory and research facilities would not have been reached. We are not, however, in a position at present to make specific proposals for further development. With the rapid expansion of health services contemplated under our health programme, the need for laboratory services will naturally increase. At the same time the medical teaching centers contemplated under our scheme, the district headquarters organisations and even the secondary health units may be expected to provide laboratory facilities of different degrees of efficiency. Further, in regard to special branches of medicine, laboratory and research facilities will be developed in different provincial postgraduate training centers we have recommended. In these circumstances we must leave it to the provincial health authorities to plan the development of such further laboratory and research facilities as may be required in the light of the arrangements which) will come into existence as the result of the proposals we have already made.

30. The proposals for the development of an improved laboratory service for Madras Presidency, which will be described in some detail below, set a standard which other Provinces would do well to follow both as regards the functions of the regional laboratories and as regards the organization of the Central Provincial Institutes. Similar proposals have been made for the Bombay Presidency. We would suggest that, for reasons already stated, this scheme of regional laboratories should be linked with other developments in connection with our health programme.

31. *The Madras scheme.*—We recommend the continuance, on an-extended scale, of the functions hitherto carried out by the King Institute, and endorse the proposals outlined by the Director of the Institute for the re-organization of the Institute itself and for the development of daughter regional laboratories to be established throughout the Presidency. These proposals are briefly summarized below.: —

32. *The creation of regional laboratories.*—there is an urgent need to de-centralize some of the functions of the King. Institute so that laboratory service may be more readily and more widely available In the districts than is the case at present. Hitherto, the King Institute has served as the laboratory for most of the district headquarters-

hospitals but, owing to the limited amount of clinical material which it has been possible to send to the Institute for examination, the hospitals have not had as complete a laboratory service as they require. In addition, health workers in the field, especially during epidemics, cannot at present obtain adequate laboratory service near at hand. For these reasons the creation of regional laboratories at the following centres is necessary:—

(1) Bellary—to serve the needs of the Ceded districts.
(2) Madura—to serve the Southern districts.
(3) Coimbatore—to serve Salem and the West Coast districts. ,
(4) Vizagapatarm—to serve the Northern Circars.

The last-named could conveniently be established In connection with the Medical College at Vizagapatam and, if medical colleges are established in the other places also, the regional laboratories should be associated with them. Other districts such as Nellore, North Arcot, South Arcot, Chingleput, and Madras City would continue to be served by the parent institute at Guindy, while the Pasteur Institute, Coonoor would continue to serve the Nilgiris and surrounding areas.

33. The functions proposed for these regional laboratories include the conduct, for their respective areas, of the following:'—

(1) Bacteriological and serological examinations of all clinical material received from hospitals and dispensaries and from the public health authorities.

(2) Examination of samples of food submitted in connection with the Prevention of Adulteration Act.

(3) Examination of water from protected supplies in the area.

Regional laboratories would also serve as subsidiary centers for the-(distribution of biological products, such as therapeutic sera and prophylactic vaccines. In addition, the regional laboratories would be well-placed for development as centers of research, particularly clinical research for which a wealth of material would be available from the well-equipped district hospitals. Decentralization on the 'lines recommended would ensure more efficient and more widespread diagnoses of disease and better investigation and control of communicable diseases. There would also be provision for the extension of the important functions of food and water analyses, thus providing for an extension of food and water control to the remote areas. Regional and district laboratories, when formed, should be placed under the administrative control of the Director of the parent Institute at Guindy A cadre of especially selected an3 trained officers and assistants should be maintained to serve the King Institute as well as the regional and other laboratories in the Presidency. Similarly, common provision should be made for the supply of all laboratory materials, stores and equipment.

34. Re-*organization of the King Institute.*—It is not anticipated that, when some of the functions of the King Institute have been de-centralized in the manner outlined above, the work of the parent Institute will be decreased. On the contrary, it will be extended and developed, especially for research purposes, and this will necessitate

a re-organization of the existing sections and the provision of additional accommodation and equipment. The Director's proposals for re-organization of the Institute, with which we fully concur, are summarized below:—

(1) *Diagnostic Department.*—For the examination of clinical material, the preparation of diagnostic reagents and their issue to all regional and other laboratories In the Presidency and the maintenance of stock cultures.

(2) *Department for the Manufacture of Bacterial Vaccines, Sterile-Solutions, etc,*—The work of this department would be carried out in a new block especially designed and built for the purpose.

(3) *Vaccine Lymph Department.*—This department would remain, as at present, a centre for the manufacture, storage and distribution of vaccine lymph.

(4) *Department of Anti-toxins.*—This department would produce-therapeutic sera for the Presidency and also products for immunization against diphtheria, tetanus, etc.

(5) *Government Analyst's Department.*—This department would' carry out duties similar to those at present undertaken for the areas under its jurisdiction and would be available as a reference laboratory for the new regional laboratories.

(6) *Department of Water Analysis and Algal Control.*—This-department would assume responsibility for the chemical and bacteriological analyses of water and undertake research work on the control of algal growth in water-supplies and on water purification

(7) *Department of Medical Bacteriology.*—This department would assume responsibility for the conduct of laboratory work on malaria, filariasis, dracontiasis, medical entomology, helminthological, etc. Field investigations in connection with these diseases would be carried out by the "Investigation Units" already established for the purpose.

(8) Blood *Bank Section.*—This section would function mainly as a blood processing centre if the policy of establishing blood banks-(whole blood) in the Presidency is adopted. It would also serve as a centre for research in the development of better methods of processing and drying.

When the Institute has been re-organized on the above lines and when additional staff, accommodation and equipment have been made available, it will be possible to continue and expand research activity in the various departments. The Institute is at present better staffed and equipped for research on filterable viruses than any other in India and is likely to maintain its premier position in this field of work.

The good library facilities at present available" will be further developed in order to provide a comprehensive medical library for South India, the amenities of which will be available to workers in other medical institutions and to private practitioners.

35. *Haffkine Institute,* Bombay.—The Haffkine Institute, Bombay, has made rapid advances during the past decade and may now be considered one of the best equipped and most active laboratories in India for routine and research work of the type undertaken. At the present time work is in progress to extend the laboratory accommodation at a cost of approximately Rs. 12 lakhs in order to set up new departments.

36. Plans for future development now being discussed include the provision of an adequate laboratory service for the Presidency by the creation of four regional laboratories at Belgaum, Poona, Aasik and Ahmadabad, and by the provision of improved laboratory services at each district hospital throughout the Presidency. The intention is that these greatly extended laboratory services will undertake work both for hospitals and for the Public Health Department. These proposals are, therefore, very similar to those outlined for Madras Presidency.

37. In order to increase the supply of highly-trained laboratory technicians in the Province to keep pace with the expansion outlined above, a scheme is at present being initiated under which the Haffkine Institute will recruit 12 science graduates each year to undergo a course of training in bacteriology and clinical pathology, lasting for 12 to 18 months. The aim will be to train 70 to 80 men of this type for posts in the extended laboratory service of the Province.

38. We recommend the continuance of the routine and research-functions at present being performed by the Haffkine Institute and endorse the proposals for their future development and extension. We also recommend that the plans for establishing regional laboratories throughout the Province and for improving laboratory facilities at each district hospital should be carried out.

39. (c) *Laboratories maintained by the Government of Bengal.*— The provision at present made by the Government of Bengal for the conduct of public health laboratory work, particularly for the preparation of essential biological, is quite unsatisfactory. There is a very real and urgent need in Bengal for a properly constructed, staffed and equipped Institute of Preventive Medicine organized on the lines proposed for the future development of the King Institute, Guindy, or the Haffkine Institute, Bombay. We consider that such an institute could be conveniently located on the outskirts of Calcutta where building sites can be obtained at cheaper rates and on a more extensive scale than in the urban area. The chief functions of the institute recommended would be: —

(1) The conduct of public health laboratory work of all kinds, including departments for food and water analyses, diagnosis, medical biology, etc
(2) The preparation, under optimum conditions, of a representative series of biological products, including departments for the large-scale preparation of bacterial vaccines, anti-rabic vaccine, anti-toxins, prophylactic toxoids, vaccine lymph, sterile solutions for parenteral injection, etc.
(3) To provide accommodation for the Provincial Drugs Control Laboratory.
(4) To provide a training ground for expert technical personnel.
(5) To carry out applied research in relation to all branches of the routine work of the institute.

40. An institute of this kind would undoubtedly be a great asset to the Province, but it is probable that, with greatly increased emphasis

on public health activities of all kinds, it would soon become necessary to establish subsidiary laboratories, especially for public health and diagnostic work, at other centers throughout the Presidency. These might conveniently be established on lines similar to those proposed for regional laboratories in Madras Presidency. One of the most important functions of the main institute would be to form a modern biological station so as to set a high standard for the various commercial firms already established in Calcutta, and to provide a training ground for expert technical personnel to be employed by them.

41. The new institute should be established on bold lines and should be constructed and equipped in such a manner that it could be adapted to altered functions or new lines of work, without incurring extensive structural alterations. The functions of any institute of this kind are continually changing and developing in relation to up-to-date knowledge and no greater mistake can be made than to build and equip an institute with regard only to its immediate requirements.

42. *Laboratory Services in other Provinces.*—we recommend the progressive development in all other provinces in India of laboratory services and facilities for research similar to those outlined above for the three Presidencies of India.

Organizations Financed from Other Sources

43. *Pasteur Institute of South India, Coonoor.*—this institute is capable of being developed into an active centre for medical research. So far as they go the laboratories and equipment are good, but any great extension of work require the provision of additional laboratories. The institute is exceptionally well-provided with facilities for the breeding and maintenance of laboratory animals.

44. The Association or the Pasteur institute of south. India is the only remaining "Pasteur" organization in India which is self-supporting and therefore, inherits a claim to become the chief centre for rabies research in India. It is recommended that it should be developed as such, and that it should receive additional support from other sources such as the proposed. Central Medial Research Organization or the income oh the invested capital of the Association of the Pasteur Institute of India. Rabies research has been neglected in recent years' although there is still a great need for it. For example, the anti-rabic vaccine at present in use is identical with that introduced by Sample at Kasauli in 1911 which must be regarded as an extremely crude product. Preliminary work carried out at the Pasteur Institute, Coonoor, a few years ago has shown that it is possible experimentally to eliminate much of the animal protein from sheep-brain vaccine without impairing its antigenic value. It is obviously important that this work should be followed up especially as there are indications that the rare, but highly dangerous, complication known as "paralytic accident" may be due to the brain protein Included in. the present crude vaccine. The etiology of "paralytic accident" is another problem which deserves further investigation. Likewise, there is room for further research to evolve better and more certain methods for the diagnosis of rabies in animals. These and other unsolved problems in regard to the diagnosis and prevention of rabies necessitate the setting up of at least one active centre for

rabies research in India and, in our opinion, the Pasteur Institute at Coonoor offers an ideal location for such a centre. It would of course, be necessary to increase the staff of the Institute, to provide the necessary equipment for the work to be undertaken, and possibly even to extend the available laboratory accommodation. Rabies is very prevalent both in jackals and dogs in the Nilgiris and no difficulty would be experienced in obtaining strains of "street" virus for experimental work.

45. The Institute at Coonoor is already well equipped to undertake laboratory diagnostic work for hospitals and practitioners and it could, therefore, be readily converted to undertake the functions of a regional laboratory for the Nilgiris area in the scheme recommended for the Madras Presidency (see recommendations under King Institute, Guindy).

46. The continuance in Coonoor of the Nutrition Research Laboratories as a nutrition centre for South India, and of the South India branch of the Malaria Institute of India already in Coonoor is recommended. If these various interests were properly coordinated, the Pasteur Institute would become a very active centre for research on such important subjects as rabies, nutrition and malaria. The easy accessibility of all parts of South India from Coonoor and the enormous amount of material available in or near Coonoor, make it ideally suited for development as a research centre for these subjects.

47. *Miscellaneous.*—The potentialities of other institutions in the future development of- medical research in India will be apparent from the review of the resources of individual organizations given in the first volume of this report.

V. Researches on Special Subjects

48. Certain special subjects, particularly malaria and nutrition, are of such paramount importance to all sections of the community in India that research on them is required on an exceptionally wide scale.

49. *Malaria.*—While it is recognized that there is still need for further research of a basic nature on many aspects of the malaria problem in India, knowledge of this disease has advanced so far that the bulk of the research work now necessary on this subject is so intimately integrated with practical malaria control measures that the two cannot be dissociated. The organization required for practical malaria control measures and research activities associated with them is primarily of a public health character and must- be so re-garded and financed by the Central and Provincial Governments; The following minimum organization is considered to be essential: —

(a) *The Malaria Institute of India.*—This organization, originally constituted and financed by the. Indian Research Fund Association has already been taken over in part by the Central Government, and now functions as a public health organization financed from Central Revenues. The existing organization has been properly conceived but requires to be greatly expanded in order properly to fulfill the functions enumerated for this Institute in the section dealing with our recommendations in respect of malaria.

The research activities of the Institute are, at present financed by the Indian Research Fund Association but there is great need for

the extension of these activities. Research activities must remain a primary function of this Institute, especially research 'of an applied nature, while research of a basic nature should be carried out in association with the appropriate sections of other organizations such as the proposed new All-India Medical Institute and Chairs of Malariology in Medical Colleges. There are many aspects of the malaria problem which can best be investigated in this way, for example, the study of biological, clinical, biochemical and pharmacological problems.

The Malaria Institute of India must maintain its position as the chief information bureau on malaria in India, and the Director and staff of the Institute must keep themselves fully informed of all advances in knowledge made in other parts of the country and of the world. Delhi is considered to be a suitable location for the present Institute, but it is desirable that the branch of the Institute established at Coonoor in S. India should be retained and expanded.

The Malaria Institute has done much to spread knowledge of this disease throughout India particularly by training medical officers from all parts of the country in malariology, and also engineers in the , principles and practice of malaria prevention. Apart from this we have included the suggestion, in our special recommendations in respect of malaria, that Chairs of Malariology should be established in. selected medical colleges in the Provinces in order to provide further facilities for teaching and research in the subject.

(b) *Provincial Malaria Organisations,*—There is an urgent need in each Province in India for a strong malaria organization to plan and execute malaria control schemes and to conduct the preliminary and concomitant investigations which are invariably necessary in connection with them. We have made detailed recommendations for the establishment and maintenance of such provincial organisations in the chapter on malaria.

The wealth of clinical material available for study at all medical teaching and relief centers throughout the. Country should be utilised for the conduct of special investigations on the clinical and therapeutic aspects of malaria.

50. *Nutrition.*—Nutrition is a problem of vital concern to the people of India. Active research is a necessary part of any successful attack on the nutrition problem. All progress is based on research and there is abundant evidence to show that nutrition research can make valuable contributions to human welfare In all progressive-countries, large sums are spent on nutrition research and it is necessary that, in India also, such research should receive ample encouragement and support in order to hasten the solution of short and long-term policies regarding nutrition.

51. The Nutrition Research Laboratories at Coonoor were founded by the Indian Research Fund Association in order to provide a strong centre for research on nutrition problems; to act as an information bureau so as to make the results freely available to all concerned and, in collaboration with public health officers, to translate these results into practical nutrition work. 'We recognize the important work already carried out by this organization and recommend that the Coonoor laboratories should be retained as a nutrition centre for

South India. We consider, however, that extended provision for the study of nutrition in India both in its laboratory and public health aspects is necessary. Experience has shown that the Central Government has been unable to make the fullest use of the Coonoor laboratories on account of their great distance from the Capital. The creation of a strong central nutrition organization with staff and laboratories adequate to form a permanent centre for research, reference advisory and advanced training work, is recommended. This might conveniently be included as a section of the proposed new All-India. Medical Institute.

52. Apart from this provision for nutrition research at the centre there is a great need for widespread research to be carried out in the universities, medical colleges and other laboratories in the country. In addition, the great mass of clinical material available in India provides an opportunity for India to lead the world in clinical research on nutrition. "We recommend the development of clinical research units to be attached to some of- the larger hospitals in India, and, in particular, to hospitals for children's and ophthalmic diseases. Nonmedical workers, such as biochemists, could play a valuable part in the work of such units.

53. In our view the present system of supporting nutrition research by temporary year-to-year grants to individual workers has certain disadvantages, including interruption in the continuity of work and the frequent loss of the services of workers who have gained some-experience. We recommend that this system should be largely replaced by the support of nutrition research units of a more permanent nature at selected places where suitable laboratories exist together with a nucleus of experienced workers and competent direction. This would ensure continuity of work and provide opportunities for the training of skilled nutrition workers as well as for the development' of national nutrition organizations. The two such units recently established at Bombay and Dacca should be further developed.

54. We consider that the translation of the results of research to practical public health measures is an essential function of the Health Departments of the Central and Provincial Governments. We have therefore made proposals for the creation, as a part of the health’s organization, of nutrition departments at the Centre and in each Province, in that chapter of this report which deals with our recommendations regarding nutrition. For the composition and functions of these nutrition departments reference may be made to that chapter.

55. We recognize the necessity for training all medical and public-health workers in nutrition and to this end we recommend that satisfactory instruction" in the subject be included in all training: programmes including the medical curriculum and the courses given to health visitors, health inspectors, etc.

56. *Clinical Research.*—In spite of the great wealth of clinical material available in India, very little clinical research of high quality has hitherto been undertaken. An exception to this rule is the research work carried out at the Calcutta- School of Tropical Medicine with which, the Carmichael Hospital for Tropical Diseases is associated. A similar successful arrangement for clinical research has been provided at the Pasteur Institute, Shillong, to which a small Clinical Research Hospital is attached. The hospital attached to the

medical college, which will form an integral part of the proposed All-India Medical Institute, will also facilitate the promotion of clinical research. Nevertheless, it will be necessary, in our opinion, to create facilities for clinical research in many other centers throughout India. There are already many well-equipped hospitals with abundant clinical material in which research work could be undertaken. The primary requirements in stimulating such activity are the provision of adequate personnel of the right type. In most instances it would be necessary to provide additional laboratory accommodation, equipment and, experimental animals. It would be necessary to engage workers specifically for whole time research work. If this practice were followed in all teaching hospitals in India, present and future, a field for clinical research would be opened up which would probably be unsurpassed in any other country in the world. In many cases the conduct of clinical research would require the close cooperation of the preclinical and technical departments of the teaching institutions. To facilitate team work of this kind, it would be desirable to appoint for each teaching institution a Director or coordinator of research. Apart from clinical research in teaching hospitals, further opportunities are likely to be provided in connection with the extension of laboratory services in the Provinces as, for example, at the regional laboratories proposed for the Presidencies of Madras and Bombay, which it is anticipated will be intimately connected with well--equipped district headquarters hospitals. We recommend that these and all other facilities for clinical research should be exploited to the fullest extent. It is visualized that if clinical research is encouraged in the ways indicated, centers of high repute for research and advanced teaching in clinical medicine and surgery and the various specialties will spring up throughout the country. Potentialities for the creation of such centers already exist as, for example, the Orthopedic Surgery Unit in Madras and the Radium Therapy Unit at the Tata Memorial Hospital, Bombay

57. *Social and Environmental factors in relation to Health and Disease.*—We recognize that many of the recommendations made in this report for the future extension and development of medical research in India relate chiefly to research activities in medical colleges, hospitals, and other institutions. While "institutional" research of this kind is of the greatest value, there is a danger of its 'becoming so specialized and technical that the primary importance of the many indefinite factors of etiological and human interest in relation to the ill-health of the country may tend to be overlooked. During the past two or three, decades, medical research all over the world has tended to become " mechanized and there has been an insufficient appreciation of the fact that ill-health, even that due to 'many of the organic diseases, has discoverable origins in a complexity of environmental factors including social, domestic and occupational maladjustments associated with economic insecurity, dietary "insufficiency, over-fatigue and a host of other related factors. Social and -environmental factors in relation to health and disease are of particular importance in India, not only as regards the study of human reactions to them but also as regards their influence on the vectors of insect-borne diseases.

58. Little is as yet known of health itself within the considerable arrange of age, sex and occupation or of the manifestations and

standards which distinguish the individual in full health from the individual with incipient illness, perhaps not yet demonstrable by-known methods of detection. Likewise, little is known of the environmental factors which favor the spread of such insect-borne diseases as malaria, plague, kala-azar; the typhus group of fevers, etc. There is in India an inexhaustible field for the investigation of these and many other problems related to social diseases and disability, and for the study of man during growth and development and his reactions to environmental stress. There is much to be learned too, from the periodical study of healthy groups in childhood, adolescence and later life.

59. This approach to the investigation of ill-health is not a new concept but it is one which has been brought sharply into focus in other countries as the result of the war, and one which, it is hoped' will persist in the post-war period. The success which has attended the practical application of the results of research on this important subject has been amply demonstrated among the peoples of Western countries under the duress of war and has resulted in a re-orientation of outlook on disease in these countries.

60. We, therefore, recommend that in planning the future development of medical research in India, adequate provision should be made for research on this important subject. It is felt that research on. This aspect of health and disease must follow a definite plan. The first essential will be to collect statistical and other data relating to the possible a etiology of the problem under consideration. Subsequent analyses of such data would be likely to give some indication of the probable causes of high disease rates. It would then be necessary to undertake a close study of individual cases of the disease in question with special reference to environmental history. Any en environmental factor under suspicion would have to be further investigated by making a survey of an adequate population sample exposed to the suspected etiological factor together with a parallel survey of a comparable group not so exposed. The next logical step would be an attempt to reproduce the conditions in experimental animals and, finally, it would be necessary to prove or disprove the hypothesis by modifying the environment of an exposed group by removing or neutralizing the suspected adverse factor or factors and observing the effect on the incidence of the disease in question.

61. Investigations on the lines suggested above would obviously be beyond the competence of isolated individual workers and would have to be undertaken by comprehensive research teams requiring the closest collaboration and cooperation between public health officers, hospital clinicians and private physicians, statisticians, nutrition and other research workers, sanitary inspectors, health visitors social workers, and even local lay bodies. The onus of unearthing and exposing social and environmental evils in the etiology of ill-health must rest with the medical profession and their scientific associates. The laborious task of collecting and analyzing statistical data and of recording factual evidence and socio-medical experience must be borne largely by those whose concern is with the social rather than the individual aspects of disease and, in order that they may be able to fulfill this function, they must be guided by teaching and research in social medicine. The scope of this subject is so vast that

it could not be adequately dealt with by a special branch, but must become an integral part of all medical and social activities. In preparation for this, the importance of the subject must be stressed at all stages of the medical curriculum.

62. There is an increasing tendency for medical subjects to be grouped in the form of a "Y", the stem of which represents subjects common to all fields, while one arm represents the subjects dealing mainly with individuals, and the other the subjects pertaining to groups of individuals or communities. Research of the kind here visualized would be centered mainly, though by no means exclusively, in those departments concerned chiefly with community studies in both urban and rural areas. The development and strengthening of these departments would, therefore, be a primary necessity in fostering research in social and environmental factors in relation to health and disease. The field to be covered would, however, be so comprehensive 'that it would be necessary to appoint specially selected workers to initiate, stimulate and, above all, coordinate research on this important aspect of human welfare.

Conclusion

We wish again to emphasize that, for the effective extension and development of medical research in India, greatly increased and improved provision for training on a higher standard in the universities and medical colleges is essential at all stages, and that, in order to achieve this, existing institutions will require improvements and additions to their accommodation and equipment and to their academic staff, while many more training centers will be required. The employment of whole time teachers and research workers on scales of pay adequate to attract the very best men will all occasion an enormous increase in expenditure, but this must be regarded as unavoidable if any real progress is to be 'made.

A Note on Medical Research by Br. Vishwanath and Dr. A. H. Butt

64. Apart from paucity of funds the worst enemy of the progress of medical research in India has been the fact that the officers employed in the Medical Research Department, were mostly engaged in the manufacture of biological products and had very little, if any, time to devote to their declared function-;—Medical Research. A stage of development has now been reached in the country when the manufacture of biological products should be a purely Government's function, if the State is worked on a socialistic basis. If its organization is capitalistic, the manufacture of biological should be in the hands of the trade but under proper Government supervision. The existing conditions under which Government is in competition with trade is unjustified, particularly when it deflects personnel which should be serving the advancement of medical research, to routine manufacture.

65. One important channel of financing medical research in India has been a quasi Government organization—The Indian Research Fund Association. In our opinion the financing of medical research could be aided effectively and expeditiously by a progressive-Government. The argument of less red-tape in the working of a quasi Government organization is offset by greater scope for nepotism under such an organization.

CHAPTER XX

ALL INDIA MEDICAL INSTITUTE

Introduction

1. At an early stage in our examination of the problem of developing a comprehensive health service in India we realized that certain outstanding needs must be met before any progress in the provision of such a service could be made. These include (1) a considerable expansion of existing facilities for the training of doctors and other health workers in order to produce the large numbers that will be required for our scheme, (2) a revision of the standards of professional training in order to produce types of workers fully equipped to participate in a modern health programme with its newer and expanding conceptions of service to the community and (3) the training of a sufficient number of workers capable of undertaking research into medical and. allied problems on a scale far in advance of what has been accomplished in the past. In that section of the report which deals with professional education we have discussed, at some length, our proposals for increasing the numbers of institutions required for training the different types of health personnel and for improving their education in accordance with modern trends. We have also advocated the provision of facilities for research by all the departments of these institutions, because we feel that undergraduate and postgraduate teaching of the requisite standard can be attained only in an atmosphere of active research.

2. These institutions will naturally have to concentrate on the production, in as large numbers as possible, of the different types of health workers required for the health services we have proposed. Side by side with these developments, however, we consider it of the first importance that at least a few institutions, which will concentrate on quality, should also be established at suitable centers in different parts of the country. We realize that considerations of cost and the need to staff these institutions with the most highly qualified person's available will, in all probability, make it very difficult to start with more than one such training centre. But no time should be lost in developing one such centre for which we would suggest the designation "All-India Medical Institute." The objects of the Institute should be:—

(1) to bring together in one place educational facilities of the highest order for the training of all the more important types of health personnel and to emphasize the close interrelation existing between the different branches of professional education in the field of health;

(2) to promote research of the highest type in all the branches of study for which the Institute will be responsible;

(3) to coordinate training and research;

(4) to provide postgraduate training of an advanced character in an atmosphere which will foster the true scientific outlook and a spirit of initiative and

(5) to inspire all persona who undergo training, undergraduate or postgraduate, with the loftiest ideals of the profession to which they belong and to promote in them a community outlook and a high degree of culture, in order that they

may become active apostles of the progressive spirit in whatever held they may be called upon, to serve, whether it be teaching, research, general health work or administration.

Though the *alumni* of such an Institute may not be numerous, we feel confident that the influence which they will exert in their respective spheres will be out of all proportion to their numbers.

In no held of medical work is the need for men and women of the highest training and equipment greater than in that of teaching. We look forward to the Institute sending forth such workers, even though it may be in relatively small numbers, to the teaching institutions in different parts of the country, where we anticipate they will help to create and maintain something of the high ideals of teaching and research with which the Institute will have inspired them. Apart from such contribution to the development of professional education in the country which the Institute - will make, we believe that, in view of the present shortage of highly qualified teachers, it may be-advisable to include, within the functions of the Institute, the training of a limited number of selected individuals from the provinces, so that the facilities for advanced training available at the Institute may be extended as widely as possible without sacrificing efficiency in any way. It is hoped that the Institute will attract to itself candidates from among the most talented products of the provincial medical colleges, who in due course will return to their *alma mater,* there to disseminate the ideas and ideals acquired by them at the Institute.

The Range of the Institute's Activity

3. We suggest that, in the beginning, the Institute should aim at providing only medical training in all its branches and also the training of nurses. The Institute must, therefore, have as an integral part of it, a medical college with its teaching hospitals and laboratories as well as a college to provide the highest type of nursing education. Later on, provision should be made for the training of all higher types of health workers. We have in mind particularly dental education, public health engineering, medical zoology in its different branches and certain other subjects in which the non-medical man performs important health functions.

4. We believe that the contribution which the proposed Institute can make to promote the cultural value of medical education will be greatly enhanced by the provision of a Chair of the History of Medicine. The humanizing influence of a study of the history of medicine has been well described by Professor Henry E Sigerist in a recent publication (Appendix 47). He says; "Instruction in medical history, if properly conducted, could greatly contribute to the training of an educated physician. It would teach the student history, the history of his own country but also the history of the world with a bias on medicine that would bring the subject much closer to him. It would teach him to look at modern medicine from the perspective of history and to see it install its economic, social, religious and philosophic implications, as the result of a long development, as a dynamic process. He would soon find that scientific medicine has a philosophy also. We too look at the human body as a microcosm in the midst of the macrocosm. The same elements,

that constitute the organism are found in the outsider world, and the same physicochemical forces are acting in both. The physician thus trained would have a much clearer idea of the task of medicine and of the part he is called upon to play in society."

We fully endorse his view that the physician of the future should be an even more highly cultured individual than his predecessors and that he should have, to a greater extent, that wider outlook which will enable him to interpret health and disease in relation to the social background of the life of the community. In this country, we believe that the historian of medicine can also perform the eminently, useful function of investigating the indigenous systems of medicine "not only for their ideological content, not only as aspects of India's ancient and mediaeval civilizations and as end Products of a long development but also for the purpose of assisting in the evaluation of their practical achievements. As a result of his studies, he may be in a position to point out to the clinicians and pharmacologists which drugs and treatments employed in these systems can be tested.

The Selection of Students

5. The selection of students to be admitted to the medical and nursing colleges attached to the Institute should be made very care fully, merit being the sole criterion for admission. The purpose ins view is that the men and women passing out from these college should provide future leaders in their respective professions and, in our view, the acceptance of any basis of selection other than merit will defeat this purpose. As the Institute is to serve the needs of the country as a whole, applicants from all parts of India should be eligible for admission.

Certain Qualifications for the Staff of the Institute

6. We have already expressed the view that the endeavor should be to inspire all, who undergo training in the Institute, with the highest ideals of the profession to which they belong and to develop- in them a community outlook and a high degree of culture. The teacher must himself be imbued with these ideals if he is to impart them to his students. We wish to emphasize that the men and. women, who are recruited to the teaching staff of the different departments of the Institute, should possess, in addition to high intellectual and academic attainments, such ideals in a pre-eminent degree so that they may help, in their daily contacts with their students, to enrich 'the minds of the latter not only with knowledge but also with that deeper understanding of human nature and the spirit of service which are essential for enabling health workers to give of their best to the community.

7. We are confident that the Institute, if developed on proper lines, will profoundly influence medical education in India in the same manner in which the establishment of the Johns Hopkins Medical School at Baltimore in the United States more than 50 years ago had a powerful stimulating effect on the development of medical education in that country. The founders of that school set new-standards for America by" blending the best elements in the different educational systems in Europe and by introducing new ideas Men Who passed out from the Johns Hopkins School, gradually spread?

through the country and carried with them the traditions of that institution. The example of that school was widely accepted, and the result was that the standard of medical education was raised in the United States as a whole. We look forward to similar beneficial results following in India from the establishment of the proposed Institute.

Beyond indicating what, in our view, should be the objectives to be attained by this Institute we do not propose to go into any details apart from dealing briefly with its general organization and -control.

We recommend that the Central Government should be responsible for the establishment and maintenance of this Institute,

Organization and Control of the All-India Medical Institute

8. The organization and control of the Institute cover (1) the administrative field and (2) the technical and scientific field. We shall deal with these separately.

The Administrative Field

9. An institution of the type we envisage should have consider able freedom to develop its own activities independently and without the delaying and hampering effect that strict governmental control may entail. For the growth of academic freedom it is essential to ensure that the Institute should be free from the routine administrative control of a Department of Government. We, therefore, propose that its administration should be vested, from the time of its inauguration, in a Governing Body of suitable composition.

10. We suggest that the Governing Body should, in the first instance, consist of eleven members in addition to the Chairman. The latter should be an independent person, prominent in public life and outside the executive authority of the Government of India. Such a person, for instance, would be the Chief Justice of the Federal Court. The first Chairman should be appointed by the Government of India. Later, it is a matter for consideration whether the Chairman might not be appointed by the Governing Body itself The composition suggested for the Governing Body
as follows: — %

(1) Chairman	1
(2) The vice-chancellor of the University in whose Jurisdiction the Institute is located	1
(3) Two vice-chancellors from all other Universities in British India in rotation	2
(4) The President, Medical Councilor India	1
(5) Another member of the Medical Council of India nominated by that Council	1
(6) The President of the All-India Nursing Council	1
(7) Two distinguished non-medical scientists nominated by the Inter-university Board	2
(8) One representative nominated by the Central Health Board	1
(9) The Director General Health services	1
(10) The Director, All-India Medical Institute (Member-Secretary)	1

When the dental and pharmaceutical professions become developed, we suggest that the Presidents of the All-India Boards we have recommended elsewhere in this report for regulating these professions should also be made members of the Governing Body.

The tenure of membership may be a period of three years except OF the case of those who hold their seats in their official capacity.

The functions of the Governing Body will be (1) allocation of funds and (2) the laying down of general administrative policy.

The Technical and Scientific Field

11. The purpose of medical education is to provide the type of -doctor the community requires. If the proposed Institute is to provide, as we have indicated it should, leaders in the different fields of medicine and particularly in the spheres of professional education and research its development should, from the very beginning be guided by sound scientific and technical advice. Although it may appear somewhat novel in this country, we suggest 'that the technical work of the Institute should be developed and -directed not by an outside body, however eminent its members may be, which will impose its ideas on the Director and Professors of the Institute, but by the latter themselves acting as a Medical Faculty. "We anticipate that those who are selected for these posts will be men and women not only with outstanding attainments in their respective subjects, but also with that wider outlook which will enable them to interpret the needs of medical education in relation to the varied responsibilities that the doctor of the future will be called upon to undertake. In making this recommendation, we are not putting forward a procedure without precedent. We understand that, in the Johns Hopkins Medical School, a similar arrangement 'has worked successfully for many years and that it has contributed materially to the attainment by that institution of the pre-eminent position it holds in the world of medical education. We also under stand that this system generally prevails in the United States It is, therefore, with some degree of confidence that we are recommending its adoption here in connection with the All-India Medical Institute.

'Recruitment of the staff of the All-India Medical Institute

12. We would draw attention to our recommendations in connection with recruitment for health services in chapter XVII of this volume of the report. The suggestions made below follow generally the principles we have laid down in that chapter.

(1) Recruitment should be solely on merit.

(2)It is essential that the best persons available should be secured. Recruitment through the world market may, therefore, have to be resorted to. The decision to do so in respect of individual posts should be preceded by a search through the country to secure suitable persons of the required caliber. The experts obtained from abroad should be entertained on short-term contracts normally not exceeding five years in the first instance.

(3)It should be made plain in the contract that every attempt should be made to train a suitable Indian within the period of the contract.

(4) There should be no reservation of any of the posts in the All-India Medical Institute for the members of any services. The criterion of selection should be merit and reservation of posts is incompatible with this principle.

18. As regards procedure, a departure seems desirable from our general recommendation that recruitment to the different health services should be made through the various Public Service Commissions. It is essential that persons of the very" highest professional standing should be secured for the posts of the Director and Professors' in the different departments of the Institute. The selection should be carried out by those who are in a position to judge the technical competence of the candidates. It is also necessary that, apart from academic attainments, the persons selected should be such as are likely to work harmoniously with their colleagues and thus to ensure the smooth and successful functioning of the Institute. To secure this, we feel that the adoption of the procedure, which has been practiced in the Johns Hopkins University and which, we understand, is generally followed in other universities in the United States, may with advantage be tried here. In the Johns Hopkins Medical School recommendations for the appointment of professors are made by the medical faculty of that institution, which consists of its own professors. While the authority for making the appointment is vested in the university the recommendation of the medical faculty is invariably accepted. We desire to see this principle adopted for the recruitment of the staff of the Institute, the Governing Body, being the appointing authority and Medical Faculty, the recommending body.

Salaries

14. We have already discussed the question of salaries in the chapter dealing with the organization and inter-relationships of the central, provincial and local health administrations.

As regards persons recruited from abroad, the salaries offered will have to be such as to secure the class of persons required. They will, of course, fall outside the regular medical services of the country and, as has already been pointed out, should be regulated by short-term contracts.

The problem of recommending suitable scales of pay for Indians is by no means easy. We have discussed the different aspects of this matter in the chapter referred to above, and do not propose to traverse the ground again. We have suggested the appointment of an *ad hoc* committee by the Government of India to examine this complex and important problem, in order that suitable recommendations may be made to the Central and Provincial Governments on which they can base reasonable scales of salary for the different categories of their employees.

Finance

15. Although we have advised that, for the reasons staled, the Central Government should divest itself of direct responsibility for the administration of the Institute, we think that if should fulfill adequately the responsibility of financing it on a sufficiently generous scale to promote its development into, and maintenance as, an All-India medical training centre on the lines indicated earlier in this chapter. An appeal should, however, be made to the public for

contributions, thus giving private generosity an opportunity to support an institution which, we feel sure, will have far-reaching influence on the future development of health" service in the country. This Institute is of such paramount importance for the full development of the proposed national health programme that we would venture to suggest that its financial stability should be ensured by the Government of India endowing it with an amount sufficient to secure, through the accruing interest, at least half the estimated annual expenditure of the institution in its fully developed form and by a statutory provision for any balance that private benefactions may fail to provide.

Legislation

16. Our proposals for the organization, administration and financing of the All-India Medical Institute involve certain departures from existing practice. It, therefore, seems necessary to secure legislative sanction for these proposals.

Three of our colleagues (Mr. Sapru, Dr. Hameed and Mr. Joshi) do not agree with the rest of the Committee on a few points. Their notes are attached.

Minute on the All-India Medical Institute by the Hon'ble Mr. P. N. Sapru and Dr. M. A. Hameed.

We have agreed to the suggestion that the appointment of Professors in the Department of the Central Institute for the training of teachers and research workers should be made on the recommendations of the teachers of the Institute itself, as the final selection will, we take it, vest with the Governing Body, the constitution of which will be determined by the Central Legislature. In our opinion the constitution provided for the Governing Body is reasonably good. But we cannot agree to the further suggestion that the shaping of the Institute in its technical aspect should be entrusted solely to the Director and Professors of the Institute acting as a medical faculty.

No adequate reason has, in our opinion, been given as to why on the medical faculty, which will presumably frame the curricula and appoint examiners, an external element should not be provided for. In our opinion, there is danger under a constitution of this character, of the academic faculty of the Institute developing into a close 'Corporation of mutual admiration. We would, therefore, provide for representation on this academic body of faculties of medicine in Indian Universities, grouped together, as an electoral college for this purpose. This representation would not, however, exceed 20 percent, of the total strength of the medical faculty. A possible alternative to this elected representation of medical faculties of universities territorially grouped together for the purposes of representation is co-option of outside experts by the medical faculty itself. We rule this solution out as we think that more harmonious co-operation 'between the medical faculties in various universities responsible for medical education and the Institute can be secured by their proper representation by direct election by University Medical Faculties on the academic Council of the Institute itself. It is, in our opinion, essential for the growth of higher medical education, research and

the raising of cultural levels in provincial institutions, to provide some-direct contact between university medical faculties and the Institute Contact between the universities and the Institute such as we visualize would have a beneficial effect both upon the academic life of the Institute and the medical faculties of provincial universities.

Note by Mr. N. M. Joshi.

As regards the control of the Central Institute, I have no objection to the creation of the 'independent Governing Body for administrative purpose and also to the technical and scientific aspect being left to the Director and Professors acting as a medical faculty provided that in the matters of the number of teachers to be trained' and the standards of their training as regards which the final decision rests with Government who are responsible for satisfying the needs of the country in this respect. The need for this proviso is greater if the Institute is to be created by special legislation.

CHAPTER XXI

HEALTH ORGANISATION FOR DELHI PROVINCE

Introduction

1. In the chapter dealing with our short-term proposals for the country as a whole we made the suggestion that the Central Government should attempt to demonstrate, in Delhi Province, the effects of implementing not only our proposals but also those put forward by the other committees, which have made recommendations for postwar developments in the different fields of community life. Without a simultaneous advance in the spheres of education, agriculture, cooperation, "animal husbandry, industrial development and others affecting the life and well-being of the people, we feel that the increased facilities proposed for the treatment and prevention of disease will not produce their maximum effect in improving the public health. That is why we are anxious to ensure that a social experiment of this comprehensive nature should be started, if possible, in Delhi Province. The purpose in view is to demonstrate to the country as a whole what can be achieved, through coordinated effort, to improve the health and general prosperity of the community.

2. We recognize, however, that, owing to the special conditions operating in the case of Delhi, it may not be' possible to secure the same results in other areas not so favorably circumstanced.

3. An essential feature of the experiment should be the active association of the people, as far as possible, with the proposed, ameliorative measures in every field. Such association alone can ensure that the measures adopted will yield the maximum results. and that the progress achieved will be maintained and extended with the lapse of years. The ultimate purpose of all effort towards social amelioration is to make the life of the individual fuller and happier and the achievement of this purpose must have, as a pre requisite, his conscious acceptance of the objectives that are set forth and his active co-operation in the realization of those objectives. Our proposals, for the establishment of village health committee's and[3] the association of the people with the formulation of health policy at the two level's of health administration in the province, namely, the district and the provincial headquarters, have been made with this object in view

OUR PROPOSALS

4. While we recommend that the development of health services in Delhi Province should generally follow the lines indicated by us for the establishment of such services in the country as a whole, certain modifications will be necessary in order to provide for some-special features which should be introduced in the Delhi scheme for certain special reasons which will be referred to later.

Our Recommendations for Provinces other than Delhi

5. Our main recommendations in connection with the short-term programme for the country are:—

(a) The new services introduced under our scheme should supplement and not supplant those which are already in existence in the areas concerned.

(b) While in each district in a province the scheme will be introduced in limited areas and extended over the whole territory in successive stages, the health services in the areas covered by the scheme should function all the time as one administrative unit, in order to ensure that the control exercised by the supervisory staff is effective and would extend even to the smallest local area under the scheme, namely, the village. This can be secured only by having one health authority to function in the area as a whole, because the presence of a number of independent authorities would naturally render efficient administration impossible. We have therefore recommended that the existing local authorities, which are responsible for health ad-ministration in their respective areas, should be replaced by a District Health Board, to which their health functions would be transferred. In our anxiety, however, to interfere as little as possible with the existing form of local health administration, provided the basic requirement of efficiency is secured, we have recommended that Provincial Governments may, after taking into consideration all the relevant factors, authorize large municipalities with populations of 200,000 and over to recruit and maintain their own health services, provided the general plan and level of efficiency recommended by us for such services are duly kept up. We have also stressed the need for ensuring that the two types of services are so integrated as to enable them to function in the closest possible co-operation.

(c) We have recommended the provincialisation of all branches of the health services in the areas covered by the scheme, with the exception of the large municipalities referred to above, and have denied the relationship between this provincial district health organization and the District Health Board on the one hand, and between it and the Provincial Health Department on the other.

(d) In order to enable the district health administration to keep in touch with the views of organized medical and certain allied professions in the district on matters relating to the health services, we have recommended the creation of a District Health Council consisting of representatives of these professions, its functions being purely of an advisory character.

(e) As regards the structure of the proposed health organization in the districts, our recommendations are that, owing to the inadequacy of trained personnel and funds, the scheme should start -modestly with primary units covering populations of approximately 40,000 and that, in due course, the number served by each primary unit should be reduced to a figure ranging between 10,000 and 30,000, taking into consideration the density of population of the area concerned.

For the area covered by a sufficient number of primary unite to provide a population of 500,000 to 600,000, there should be a -secondary unit, which will supervise the work carried out in the primary units and will, at the same time, provide through its specialist staff and hospital and laboratory facilities a higher type of health service than that which is given through the primary units.

At the district headquarters an even higher type of health organization will be provided when the scheme becomes developed to the stage of covering the major portion of each district. Its functions will include the direction and supervision of health administration in the district as well as the provision of all modern facilities for remedial and preventive health care.

(f) We have suggested that at the provincial headquarters a Provincial Health Board, on which district health administrations will find representation should be created in order to enable the Minister of Health to consult public opinion in defining health policy and in allotting funds for its implementation. The establishment of a Provincial Health Council, with its constitution and functions similar to those of the District Health Council, has also been recommended. The Delhi Health Organization

6. There are certain special considerations in the case of Delhi which will necessitate, in our view, a departure from the general plan outlined for the country as a whole. These are (1) that the area and concentration of population tend to make it a case s*ui generis* and (2) that Delhi should be a demonstration centre and that it is, therefore desirable that the organization set up here should, from the beginning, function at as high a level of efficiency as possible. We have, therefore, come to the conclusion that the Delhi health organization should differ, to some extent, from the three million plan recommended for adoption elsewhere. At the same time the general principles underlying that plan should, as far as possible, be adhered to.

7. In the first place we recommend a modification of the primary unit suggested by us for the country as a whole during the short-term programme "on the lines indicated below :—

Table showing the population, strength of staff and other provision in primary units in Delhi Province and in other povinces

(Short-term Programme)

Delhi Province						Other Provinces					
Population served	No. of medical officers		No. of non-medical staff	Provision for institutional service	Provision for Domiciliary health service	Population served	No. of medical officers		No. of non-medical staff	Provision for institutional service	Provision for domiciliary health service
	Men	Women					Men	Women			
1	2	3	4	5	6	7	8	9	10	11	12
..	..	..	..	(a) A dispensary with five emergency beds.	Two medical officers,* two public health nurses, four midwives and four trained *dais*.	..	..	..	..	(a) A dispensary with a couple of emergency beds, and two maternity beds.	Two medical officers,* four public health nurses, four midwives and four trained *dais*.
20,000	1	1	34	(b) A 30-bed hospital for a group of three primary units.	..	40,000	1	1 if available, particularly in the early stages of the programme.	36	(b) A 30-bed hospital for four primary units.	..

* The medical officers shown in column 6 are identical with those given in columns 2 and 3, and those in column 12 with those in columns 8 and 9.

8. The following are the details of the staff proposed in each case:—

	Delhi Province Primary unit (20,000) popu-lation)	Other Province Primary unit (40,000) popu-lation)
1. Medical officers (male and female)	2	2
2. Public health nurses	2	4
3. Nurse	1	1
4. Compounders	2	1
5. (a) Midwives	4	4
(b) Trained dais	4	4
6. Public health inspectors	2	2
7. Health assistants	2	2
8. Fitter mistry	1	1
9. Typist clerk	1	2
10.Inferior servants—		
(a) Supervisor	1	1
(b) Other servants	14	14

9. The population of a primary unit in Delhi Province will be half of that of a similar administrative unit in other parts of the country. The number of medical women available in India is very limited and, although it seems almost certain that the provinces will not be able to appoint women doctors in the vast majority of their primary units during the early stages of the development programme, it should be possible for Delhi Province to secure such doctors for the relatively smaller number of units that will be developed here". Our recommendations regarding the duties of the two medical officers and other members of the staff of a primary unit in Delhi are the same as those which we made in respect of a primary unit in other provinces. The smaller population the presence, of a woman doctor and the relatively larger staff for midwifery should help to make the Delhi health organization, in the early stages, more effective than those in other provinces in, promoting health work among women and children. The proposed provision for medical relief for the population as whole is, it will be seen, higher in Delhi Province than that suggested by us for other parts of the country "the dispensary will have five- emergency beds here as against two in other provinces while, the 30- bed hospital will serve a population of 60,000 as against 160,000 in the other case.

10. The population of Delhi Province at the 1941 census was approximately 918,000. Of which a very large proportion was living in the two cities of Delhi and New Delhi. The rural population was-only about 300,000 while the two cities accounted for 615,582. Since '1941 a large increase has taken place in this urban population as the result of developments arising out of the War Assuming that a certain proportion of this increase will remain even after the War, the estimate is made that the inhabitants of Delhi and New Delhi will together be at least 800,000 during the first five years of our health-development programme, if it starts functioning some time in 1946.

11. The rural population of 300,000 should be divided into 15 primary units, which will constitute a single secondary unit, at the headquarters of which there will be a secondary health centre.

12. For the purposes of our scheme we suggest that Delhi and New Delhi cities and the Civil Lines may be taken as a single urban unit. In this area, in view of the high density of population, particularly in Delhi City, the average number of people included in a primary unit may suitably be 40,000, although certain parts of New. Delhi and of Civil Dines, with their wider dispersal of inhabitants, may require a reduction of the number to 25,000 or 30,000. A secondary health unit will be required in the urban area for the supervision of the activities of these urban primary units. Co-ordination of the functions of the rural and urban secondary health units will be the responsibility of the Director of Health Services.

THE ADMINISTRATIVE MACHINERY

13. *A single health authority for Delhi Province.*—The area of 'Delhi Province is 574 square miles. The average area of the districts in the eleven Governors' Provinces ranges from about 2,200 to slightly over 6,000 square miles. Delhi's population of about 918,000 at the 1941 census is much less than the average population of individual districts in a number of provinces. In Chapter XVII of this volume of the report, where we have dealt with the question of District Health Boards, we have drawn attention to the desirability of treating, as far as possible, each district as one unit for health administration and have pointed out that, in our view, the tendency should be for local administration in different fields, such as health,, education and communications, to operate over a sufficiently wide area to provide adequate service to the people. We strongly recommend that a single authority should be established for health administration in Delhi Province as a whole. It may be designated the Delhi Provincial Health Board.

14. A special feature of this province is, however, that about two -thirds of its population lives in the two cities of Delhi and New Delhi, the respective populations of which were, at the 1941 census, about 1620,000 and 94,000. The population of Delhi City is far in excess of: 200,000 while it may well be that the population of New Delhi is mow also not far from this figure. Although we have recommended that municipalities of this size may be permitted to develop their .own health organisations on the lines indicated in this report, provided the desired level of efficiency is maintained, we feel that, in Delhi Province, the purpose of creating a demonstration centre will be better served by merging these local bodies into a province-wide health authority than by permitting them to maintain their separate health services, with whatever safeguards Government may impose for promoting their efficiency. In coming to this conclusion we have been influenced by the fact that the existence of one rural and two urban health authorities functioning independently in a province like Delhi, with its small area and highly concentrated urban population, must militate against the development of an efficient and integrated health service and must render difficult the formulation and execution of a unified health policy for the area as a whole.

15. *The structure and functions of the Provincial Health Board.*— In the creation of the Delhi Province Health Board, two suggestions that we put forward in connection with the establishment of District Health Boards may be followed. These are that all the local authorities in the area should find representation on the Board and that, in addition, there should be provision for a number of representatives

elected directly by the people. The Chief Commissioner of the Province should, in the initial stage, be its Chairman, though later, the Chairman should be elected. The Director of Health Services should be a member. In the absence of local knowledge we must leave the working out of details regarding the composition of the Board to the authorities concerned.

16. In our proposals for District Health Boards in the provinces-we recognized the need for the concurrent acceptance of two principles. Local opinion should have the right, through the Board, of giving; adequate expression to local needs and local grievances as well as of distributing the money available for health administration, which will be derived partly from local taxation and partly from Government grants, The Board must therefore have a large measure of autonomy within its own area. Nevertheless, the exercise of this autonomy should not Result in a material departure from the general health policy laid down by the Provincial Ministry of Health or in any serious neglect of the Board's functions to the detriment of local health administration. Provision for these contingencies has-been suggested by two recommendations that we have made, namely (1) that the Provincial Minister should have the power to ensure compliance, by the Board, with the general health policy laid down by him and (2) that certain legal provisions that exist in the Province of Madras for enabling the chief administrative officer of the Public Health Department to recommend specific action by local health authorities in particular directions for the improvement of the public-health and to enforce the carrying out of such recommendations, subject to the concurrence of the Provincial Government, should be made applicable to all the areas under our scheme,

17. The acceptance of this dual principle of encouraging the growth of local responsibility in health administration and of' ensuring, at the same time, the maintenance of a reasonable level of efficiency appears to us to be essential to the success of the comprehensive programme of health development we have advocated. We therefore desire to see these recommendations of ours applied in Delhi Province also. Local public opinion will be able to influences-health policy through the Provincial Health Board while the-administrative control that the Central Government has over Delhi-Province as a centrally administered area will enable the Central Health Minister to ensure that Delhi health administration does note depart from the policy laid down by him and to enforce desirable standards of efficiency. We understand that, under the provisions of the Delhi Laws Act, the conferment- on Delhi Administration of the powers existing under any enactment in force in any part of British India is permissible. The application in Delhi Province of the provisions in Madras, to which we have referred, should therefore present no difficulty.

18. *Provincialisation of the health services.*—we have recommended the provincialisation of the entire district health organization under our scheme in the provinces with the exception of the health .services maintained by certain large municipalities with a population of 200,000 or over. We considered this essential in the interests of uniformity throughout the province in respect of the methods of recruitment and conditions of service of the different categories of health personnel which it would be impossible to attain if individual District Health Boards were permitted to recruit and maintain their own services. We also considered the question as to

whether it was necessary to provincialise the entire staff under each District Health Board or only the more important posts and came to the conclusion that the whole staff, should be provincialised because we felt that two sections of the same health organization, with ultimate responsibility for disciplinary control under separate authorities, would not function efficiently and harmoniously. In applying these ideas to the' Delhi health organization we must remember that there will be only one health authority in the province as a whole. Our requirements regarding uniformity of conditions of recruitment and of service will, therefore, are met by making the entire staff servants of the Provincial Health Board. Even so, it seems necessary that, in view of ensuring that the Delhi experiment becomes a success, a certain number of the higher posts such as those of the Director of Health Services and his chief assistants at the provincial headquarters should be filled, at least during the short-term programme, by persona of approved ability in the technical and administrative spheres, who will be seconded from the Central Health Services or from one of the Provincial Health Services In view of the developments that will take place during this period, it will be for decision at the end of that period whether the same system should continue or whether the Provincial Health Board should be entrusted with the task of recruiting suitable candidates for these higher posts. It must be remembered that, by that time, a certain number of men from the lower grades of the service may have qualified, by virtue of their administrative experience and special training, for some of these important posts and that, in the circumstances, the need for importing men from the Central or "Provincial health services may have disappeared.

19. *The organization at the provincial 'headquarters.*—The administrative organization at the provincial headquarters will be based generally on our recommendations for other provinces although, in view of the small size of Delhi, we are of the opinion that the full strength of Deputy and Assistant Directors of Health recommended for the larger provinces will not be required here. The fact that the Director-General of Health Services and the technical members of his staff have their headquarters in Delhi and may therefore be expected to take a prominent part in the development of the health programme is another reason against. Employing in Delhi the full strength of the directional staff recommended for the provinces.

20. We have purposely refrained from going into the details of the health services the Province will require. Obviously such details can be worked out only through a special investigation which takes into account existing facilities in different parts of the province and relates them to what the requirements should be in the light of the broad principles which should govern the development of the proposed organization.

21. The creation of a Provincial Health Council for Delhi, with its structure and functions similar to those of corresponding councils elsewhere, will also be necessary in order to enable the health administration to keen itself informed of the views of medical and allied professions in all technical matters relating to the development and maintenance of the, health services.

22. We have specially-stressed that the new services which will be established in the provinces under our scheme should supplement and

not supplant the existing organisations for affording health protection to the people. This remark applies to Delhi Province also.

23. *The financing of the health organization.*—As regards The Financing of the Delhi health organization our recommendation is that the contributions from the existing local bodies, which will be merged in the Provincial Health Board, should be the same as those which we put forward in connection with the district health scheme for other provinces, namely. 30 per cent of their income from all -sources other than Government grants in respect of municipalities and 12 1/2 per cent in the case of rural health authorities. The additional money that will be required for the scheme should be found by the Central Government.

24. *Review at the end of seven years.*—The scheme proposed by us, if given effect to, should be subjected to review after seven years to enable stock to be taken of what has been achieved and modifications made, where-necessary.

25. *Development of communications.*—In Delhi Province although communications may have been developed to a larger extent than in many other parts of the country, we desire to stress the importance of still further improvement in this direction in order to ensure that the health services we fire recommending may confer the maximum possible benefit on the people.

CHAPTER XXII

DRUGS AND MEDICAL REQUISITES

1. We shall deal with this subject under two heads: (a) supplies and (b) control. '

Supplies

2. In the forefront of our programme for the improvement of medical relief and for the prevention of disease, we have placed the provision of adequately trained doctors and the ancillary personnel without whose help a doctor's effectiveness must be substantially circumscribed. Second in importance only to the provision of such staff must come the supply of the therapeutic substances and medical appliances without which doctors and public health workers generally may be reduced to a state of virtual impotence in the practical exercise of their profession We have had evidence to show how grave has been the lack in this country of these essentials for the public health worker and the dispenser of medical aid At some dispensaries even drugs and appliances, which should be in almost daily use, are often not to be had at all or only in such limited quantities as to paralyze the administration of effective medical aid. In many cases, even when they are available, the cost is so high as to prohibit or at least gravely to restrict the use of what may be an essential medical requisite. An instance has been given us of a drug" manufactured in this country being offered at an unconscionable price because a single firm had managed to secure the monopoly of its supply. The operations of the International Kina Bureau offer, in our view, a flagrant object lesson in the cynical triumph of commercial principles over the needs of suffering humanity. We are told, for instance, that in the year 1935-36, the actual cost of producing quinine in Bengal from home grown bark was about Rs. 6 ½ a pound. The Government selling price of this article was then Rs. 18 and the market rate Rs. 22 a pound. This market rate was' largely decided by the Kina Bureau which controlled about 95. Per cent of the world's supply of quinine So far as the general public of this country is concerned, it is to a material extent being denied the use of some of the more effective and most needed drugs either because of the price at which they are made available or because of" the limited quantities in which they are procurable. Even the cheaper and commoner drugs which are needed in daily dispensary practice are frequently not to be had as and when needed. We feel that this state of things calls for immediate attention and remedy. 3. Until the advent of the war, there was no organized attempt to see that the requirements of the country in this regard were' adequately met. The Government Medical Stores served a useful[1] though limited purpose and the initiative of a few private firms helped" to lay the foundation of an indigenous drugs manufacturing industry though it was on an extremely modest scale. For the most part, however, the foreign manufacturer had a wide market in the country for his products and the middleman a lucrative field for his operations. Not being normally philanthropists their prices were regulated by business considerations and by the desire to obtain the highest possible margin of profit. Those who could not pay, and they comprised the large bulk of the population, had just to do without.

4. Nor can the indigenous profiteer be absolved from the charge of criminal exploitation. The seas around our shores have opened up the prospect of our being able to obtain all our requirements of shark liver oil with its very high vitamin content. We are, however, informed that' a good deal of what is offered on the Indian market as shark liver oil today, under conditions' where control is lacking, is adulterated In some eases so grossly as to result in a denial of the full benefits to this country of great natural advantages.

5. War conditions brought about a dramatic change in certain respects in the medical drugs and requisites position of the country. The needs of the Army forced the abandonment of the old attitude of helpless dependence on outside sources of supply-which were in a position to dictate their own terms and which were liable to stop page at any moment. Possibilities of local manufacture had perforce to be more fully explored and this was done with remarkable, success, in many cases. Careful investigation provided efficient substitutes' for some imported drugs and medical requisites, very" often at a much lower cost while the possibilities of local manufacture were-in many-cases established beyond a doubt. The prejudice against Indian made drugs came to be slowly reduced through the compelling force of events. Certain requisites had either to Be manufactured in the country or be done without. This stimulus proved effective arid "la the case of a few medical requisites a deficit was even turned into a surplus position.

6. We should here also like to emphasize the success which has attended the policy of associating non-medical scientific men with the organization and development of the drugs industry in this country and to express the hope that this policy will be continued in the future.

7. Some idea of the change that has been brought about by the stress of circumstances during the past 3 or 4 years can be obtained from the following illustrations: —

Name of Drug	Annual peace time consumption in India (estimated)	Estimated Indian production 1945
(1)Amyl nitrite	140,000 caps.	2,000,000 caps
(2)Argenti Nitras.	5,000 lbs.	10,000 lbs.

We do not by any means wish to suggest that the position is now entirely satisfactory. We do, however, wish to point out that the story of what has been accomplished in this war, though it is no more than a beginning, is a convincing proof that, given the will, organized effort can, with the help of the scientific assistance which it is possible to command, make this country almost, if not entirely, self-sufficient in the matter of drugs and medical requisites. it would be little short of a national calamity if even the position now attained after 5 years of war were allowed to be lost when the urge to maintain and improve it has ceased to operate or if other considerations were permitted to intervene and stifle a young industry of the greatest national importance to the country. The administration should be chargeable with gross negligence if the position now attained were not made the starting point for building up an indigenous source of supply, which will be able to meet the overwhelming bulk of the country's demand for medical requisites.

8. We have asked ourselves the question what are the objections and difficulties in the way of the country being made self-sufficient in this sphere. We detail below the considerations of major importance which appear to us to call for examination in this connection.

(1) It may be urged that among our requirements are some which it would not be an economic proposition from the point of view of cost to produce in the country.

(2) It may be contended that either the raw material or the basic requisites for manufacture in India are at present lacking in certain cases

(3) Certain drugs and appliances are of so highly specialized a character that it may take a very long time to produce these in India of a comparable quality.

(4) Certain medical requisites are covered by patents and it may therefore not be possible to overcome the monopoly position occupied by them.

9. So far as (1) is concerned, we can only say that a careful balance will have to be struck between the claims of a nation's health and economic considerations. India should be gravely unmindful of the teaching of history if she risked once more the interruption or limitation of essential medical supplies to the country through human greed or world causes over which she had no control, because she was unwilling to pay a reasonable premium to insure against such a calamity. "Whether in a particular case the insurance is reasonable or not would of course need to be carefully calculated. We ourselves believe that the cases in which it would be found to be more advisable to obtain supplies from aboard on this ground would be rare exceptions to the general rule that the medical requirements of the country should be produced in the country.

10. In considering cases falling under (2), it has impressed itself upon us that there has been a tendency too easily to accept any Suggestion that this country cannot meet a particular requirement from its own resources. The case of pyre thrum affords a striking illustration of this. The legend had grown up and it had been generally accepted that pyre thrum could only be grown as a commercial proposition in Kenya and Japan. This may have been founded on an 1honest belief or it may have been sedulously fostered in order to support a gilt-edged monopoly. When war time needs force a more rational method of dealing with such monopolies, however, it did not take long to liquidate this misconception. Not only has experience shown that it is possible to grow pyre thrum of high quality in Kashmir, Assam and the Nilgiris but more extensive experiments have suggested that pyre thrum, with a sufficiently high pyrethrin content to make its production a commercial proposition, might be grown under such diversely varying 'conditions as those" prevailing in Mysore, the Central Provinces, the Orissa States and Chittagong. We feel that, given a genuine desire to explore and exploit to the utmost the resources of the country, the list of medical requisites which cannot be produced in India will shrink to extremely limited proportions. Where the basic requisites of production are not being or cannot at present he manufactured in the country, there should be a serious examination of the possibilities of such manufacture.

11. We have been told that such synthetic products for instance as mepacrine, D.D.T. and the sulfonamide group require basic essentials which are the product of a heavy chemical industry at present non-existent in this country. If this is so, then an additional argument is provided for giving adequate aid and encouragement to bring an Indian heavy chemical industry into being. Such an industry we consider fundamental to meet the needs of the country.

12. If it seems impossible to produce these chemicals at a reasonably early date in India, then we suggest that agreements with producing countries should be made whereby India would be able to get her immediate requirements in exchange for her specialties.

18. Turning to the cases which fall under (3), we recognize that it may require a heavy expenditure of time, money and effort to equal or even approach the level of workmanship and quality which some countries have attained in the production of certain highly specialized medical equipment. A Leitz microscope for instance is in a class by itself and it may be long before its quality can be equaled by its competitors. Nevertheless we believe that, through a determined effort, the range of products' which are at present supplied from outside the country can be very materially reduced and that, even if in some cases it may not be possible for a considerable time to equal the quality of an imported article, it may be possible to pro-duce a fair working substitute for general use. It is only in this way that a body of scientific experience and of skilled craftsmen can be built up to help the country to become eventually self-sufficient in respect of its essential requirements in this particular field. So far as drugs are concerned, we are confident that provided adequate provision is made for research, and if appropriate aid and encouragement are given to private enterprise, no fear need be apprehended that the quality of the Indian produced article will not come up to the standard which may be laid down for its ,quality under statutory enactments, as indeed has been found during the last emergency when, given the equipment, India was able to produce drugs of a very high and exacting standard.

14. We would suggest that universities should be encouraged to undertake research with a view to the production,' in this country, of drugs which India has now to import and the discovery of new or improved drugs.

15. We realize that the patents referred to in (4) constitute a difficulty. Our general view is that normally such patents tend to operate so far as the price factor in relation to the general public is concerned in the manner of all monopolies and are therefore *prima facie* to be deprecated if the people's health is our first consideration. In the case therefore of medical requisites covered by patent, whose availability at reasonable prices is considered essential for the health needs of the people, every endeavor should be made to produce in the country cheaper substitutes which can be manufactured for general use. To give an example, certain products incorporating Kurchi have been found to be an efficient substitute for Emetine products in the treatment of amoebic dysentery and the plant is to be found in all parts of the country. Should, however, such endeavors' prove anfractuous, an attempt should be made by Government to secure the patent rights of the article for the country

to ensure its sale and possibly its manufacture in the country at reasonable prices.

16. We have a recommendation to make in this connection. The first is that a small committee, mainly but not entirely technical in composition, should be appointed to examine the question of the requirements of the country in respect of drugs and other medical requisites. The following are some of the more important matters which they should investigate: —

(a) What are the drugs and other medical requisites essential for general use in the country ?

(b) What practical steps should be taken to ensure their manufacture in the country in sufficient quantities and their sale at a price which will make them available to all who need them?

(c) What are the circumstances which would justify the conclusion that the manufacture of any of these in the country is inadvisable?

(d) What should be the respective fields of Government and of private enterprise in the manufacture of these requirements?

(e) What aid and assistance should be given to private agencies in such cases and under what conditions?

(f) What machinery should be established to develop research regarding drugs and other medical requisites and their production in India and to ensure the continuity and co-ordination of such research?

(g) What machinery should be set up to ensure a steady flow of trained technical personnel?

While we have suggested the examination of these questions by a special *ad hoc* body, there are certain general conclusions which we feel we should record.

17. The final responsibility should, in our view, rest with the Government for seeing that the essential needs of the country in respect of all important medical requisites are met and this responsibility should be interpreted as covering the necessity for ensuring that these requirements are met satisfactorily in regard to quantity, quality and price.

18. We believe that it should be possible adequately to provide for these essential needs through a combination of private enterprise suitably assisted where necessary, and production by the State where this is found to be in the public interest.* We feel for instance that Governments should themselves produce the biological products which are necessary for the prevention and treatment of epidemic diseases. It is not in the public interest that Governments should be at the mercy of private agencies in regard to the supply of such requirements which may be needed at very short notice, in large quantities, of a high standard of quality and at reasonable prices. We are therefore of the view that Governments should themselves undertake the pro- (Suction and storage of such prophylactic sera and vaccines as are required for use in the case of cholera, plague, smallpox, etc., to meet their own estimated requirements for use through their own staff

* In the opinion of one of our colleagues (Mr. N.M. Joshi) the production and distribution of drugs and their medical requisites should be undertaken by the State and not be left to private enterprise.

and at their own institutions or at institutions under the control of local authorities and of missionary or other recognized charitable organisations imparting medical relief. Those Provincial Governments which do not want to undertake this responsibility, may find it possible to make arrangements with the Central Government for the supply of their requirements from the Central Laboratory or may combine with other Provincial Governments to establish common centers of production. These should not, however, be made a source of profit. If Governments wish to rely to a limited extent on private enterprise to supplement the supply of such prophylactic biological products from their own laboratories, there can be no objection to such a course but we consider that their main reliance should be on their own production or on the production of other governmental sources with which they have entered into an agreement for the supply of their requirements. This we believe is in accordance with the practice prevailing in Australia and even in U.S.A. we understand that a number of States manufacture all the biological pro--ducts they need. The Governments in India, Central and Provincial, should be charged with the duty of watching progress and taking such measures as may, from time to time, be necessary to further the growth and development of the drugs and medical appliances' industry in the country.

Control

19. The importance of maintaining adequate standards of purity and potency in the drugs and medicines used in connection with the prevention and treatment of disease can hardly be over-emphasized. This country has suffered much in the past from the lack of organized control and supervision over therapeutic substances and, medical appliances. The unscrupulous have reaped a rich harvest at the cost of a long suffering public. There have, it is true, emerged a number of reputable indigenous firms which have done much, under extremely difficult circumstances and in the face of severe handicaps, to initiate the beginnings of a sound and reliable drugs and medical appliances industry in the country. The need for supervision and 'control has, however, grown more insistent with the ever-widening range of medical substances and appliances that the march of science is from time to time bringing into existence and general use.

20. Even in a country like the United States, where private as opposed to state manufacture is so generally accepted as a national industrial policy, all commercial concerns manufacturing drugs or biological products must obtain a license to do so from the State concerned if the products are for use only within the State, and from the Federal Public Health Service if these are to be permitted entry into inter-State commerce. The grant of such a license is preceded by an examination of the proposed plan of manufacture and of the qualifications of the personnel employed as well as by an inspection of the plant. Samples of the products are also taken periodically for tests in regard to purity, potency, expiration date and other criteria, in order to ensure that the standards laid down are being observed.

21. Similarly, in the United Kingdom, biological products can only be manufactured under a license which is granted after careful examination and enquiry and is liable to cancellation at any time if the quality of the product or the conditions of its manufacture is found to be unsatisfactory.

22. In India, except for provincial enactments in two Provinces, which contain provisions in respect of the adulteration of drugs, no statutory powers of supervision or control existed till recently in regard to the manufacture, sale,' quality and distribution of drugs. In practice it may be said that these matters were subject to no regulation or supervision. The Drugs Act of 1940 passed by the Central Legislature now provides for the regulation of the import into and the manufacture, distribution and sale, in British "India, of drugs. We understand that certain statutory Rules under the Act will be brought into force at an early date by the Government of India. We have, referred to this enactment in our Review and need do no more than record our opinion that its provisions should be brought into operation throughout the country and rigidly enforced with the least practicable delay.

23. We understand that India has an appreciable trade in drugs with some of the neighboring countries and that this trade is likely to grow. 'We would urge that adequate measures should be taken to ensure that the drugs which are exported are of the requisite quality and that the fair name of India does not suffer by drugs of doubtful value being sent abroad, while a vigorous control is exercised over their supply for internal consumption.

CHAPTER XXIII

INDIGENOUS SYSTEMS OF MEDICINE

1. In considering the question of the place which the indigenous systems of medical treatment should occupy in any planned organization of medical relief and public health in the country, we are faced with certain difficulties. - We realize the hold that these systems exercise not merely over the, illiterate masses but over considerable sections of the intelligentsia. We have also to recognize that treatment by practitioners of these systems is said to be cheap, and it is claimed that the empirical knowledge, that has been accumulated over centuries has resulted in a fund of experience of the properties and medicinal use of minerals, herbs and plants which is of some value. Further, the undoubted part that these systems have played in the long distant past in influencing the development of medicine and surgery in other countries of the world has naturally engendered a feeling of patriotic pride in the place they will always occupy in any world history of the rise and development of medicine. This feeling has not been without its effect on the value which is attached by some to the practice of these systems.

2. We are unfortunately not in a position to assess the real value of these systems of medical treatment as practiced today as we have been unable, with the time and opportunities at our disposal, to conduct such an investigation into this problem as would justify clear-cut recommendations. We do not, therefore, propose to venture into any discussion in regard to the place of these systems in organized State medical relief in this country. We do, however, say quite definitely that there are certain aspects of health protection which, in our opinion, can be secured wholly or at any rate largely, only through the scientific system of medicine. Thus public health or preventive medicine, which: must play an essential part in the future of medical organization, is not within the purview of the indigenous systems of medical treatment as they obtain at present. This in no way reflects upon these systems. It has, however, to he recognized that great improvements have taken place in the field of public health as the' result of the many discoveries of science which are and can be implemented only through the scientific system of medicine and through personnel trained in such a system It is also to be recognized frankly that the indigenous-systems of medical treatment do not at present deal with such vital aspects of medicine as obstetrics, gynecology advanced surgery and some of the specialties. Above all it is necessary that we should keep prominently before our eyes the intimate relation between science and the advancement of medicine. No system of medical treatment, which is static in conception and practice and does not keep pace with the discoveries and researches of scientific workers the world over, can hope to give the best available ministration to those who seek its aid. . .

3. A recent article in the Indian Medical Gazette draws attention to this connection so vividly that we feel a quotation from it will be instructive:—

> "The science of medicine" it says "is a very ancient one It progressed slowly throughout the earlier ages of

history—such slow advance as there was, being arrested from time to time by religious prejudice or by undue reverence for alleged authority It was not until the middle of the 19th century that medical science became firmly established on a secure foundation. The invention of the compound" micro-scope, the rapid development of Organic Chemistry and latterly of Bio-Chemistry and Bio-Physics have led to such an advance that we can say with truth that 95 per cent, of the total corpus of knowledge with regard to the working of the human body has been obtained within the life time of men who" are still with us.

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"It may surprise some to know that nearly all advances in the science of medicine now come from men who have nothing to do with medical practice or with the care of the sick but who have a special knowledge of and training in the fundamental sciences of Physics, Chemistry and Physiology……
……..

Science is one and indivisible. No advance is possible with one sub-division of knowledge without its reflection in all other sub-divisions, and rejoicing over a discovery is not to be confined to the members of the particular scientific band immediately concerned."

The article goes on to point out that it is the lack of appreciation of these elementary facts that is at the root of our trouble in getting scientific medicine placed in its proper perspective.

4. We feel that we need no justification in confining our proposals to the country-wide extension of a system of medicine which, in our view, must be regarded neither as Eastern nor Western but as a corpus of scientific knowledge and practice belonging to the whole world and to which every country has made its contribution. We feel that it would be unfair and unjust merely because some other method of treatment is said to be cheaper, to deny to anyone in this country the benefit of the scientific system and of the daily growing volume of research and achievement in the wide world of science.

5. We have been informed that in China and Japan, a moratorium extending to a definite period of years was declared after which the practice of the indigenous systems in those countries would not be recognized. We were further told by Dr. Ognev, the Soviet Representative, that indigenous systems of medical treatment were no where recognized in the Soviet Union. This, however, is a subject on which we are unable to make any recommendations so far as this country is concerned. We feel that it should be left to the Provincial Governments to decide what part if any, should be played by the indigenous systems in the organization of Public Health and Medical Relief. It is for them to consider, after such investigation as may be found necessary, under what conditions the practice of these systems should be permitted and whether it is necessary, either during some interim period or as a permanent measure, to utilize them in, their schemes of medical relief.

What we have said in regard to the indigenous systems applies generally to Homeopathy also.

We have recommended the establishment of a Chair of History of Medicine in the proposed All-India Medical Institute and have suggested that one of its functions should be the study of these systems in view of the importance of investigating the extent, to which they can contribute to the sum total of medical knowledge,

* Three of our colleagues *(Drs.* Butt, Narayan Rao and Vishwa Nath) desire to make a definite recommendation suggesting the fee utilisation of the services of persons trained in the indigenous systems for promoting public health and medical relief in India. Their note will be found at the end of the next chapter.

CHAPTER XXIV

REGULATION OF THE PROFESSIONS RESPONSIBLE FOR HEALTH SERVICES TO THE COMMUNITY

A. **Regulation of the Medical Profession**

1. In India the treatment of sick persons is practiced by two- classes of individuals, those who possess registrable qualifications in modern scientific medicine and those who do not. It is part of the democratic conception that the. individual citizen has the absolute-right to take his ailments for treatment to anybody he chooses, but it is also part of the individual citizen's right that he should have an exact comprehension of the pretentions to competence of the individual he employs. Practitioners of the scientific system of medicine are, the world over, subject to more or less rigid regulation, the degree of such regulation and the authority from which it is derived varying with different countries.

2. In the United Kingdom this function is vested in the General Medical Council of Medical Education and Registration of the United Kingdom which was established by the Medical Act of 1858. By the Medical Act of 1886 this body has been vested with the duty of securing the maintenance of such standards of proficiency from candidates at the qualifying examinations for entry into the Medical Register as would guarantee "the possession of the knowledge and skill requisite for the efficient practice of medicine, surgery and midwifery." For this purpose the General Medical Council was empowered to appoint Inspectors of Examinations to attend all or any of the qualifying examinations and "to report to the General Council their opinion as to the sufficiency or insufficiency of every examination which they attend and any other matters in relation to such examination which the General Council may require them to report".

3. In India the Indian Medical Council was established by the Medical Council Act of 1933, but its functions differ materially from those of the General Medical Council in the United Kingdom. It has not been authorized by law to maintain an All-India Medical Register. Moreover, the basic qualifications for medical registration are those of medical licentiates, a body of practitioners who are the concern of the Provincial Medical Councils. The -maintenance of Medical Registers arid the supervision of the basic qualifications required for entry into them are, at present, responsibilities entrusted to Provincial Medical Councils and Faculties. The supervision of the Indian Medical Council is, as yet, restricted to certain medical qualifications which are granted by Indian Universities and which are incorporated in the First Schedule of the Indian Medical Council Act.

4. We consider this position unsatisfactory. We are recommending that for the future, there should only be one basic' medical qualification for entry into the profession throughout India and that the portal of entry should be a University degree. The production of the licentiate type of doctor will cease after some time if these recommendations of ours are implemented by the Governments m India and the difficulty which was responsible for the dropping of

the proposal for an All-India Medical Register in 1933, namely, the co-existence of the graduate and licentiate types of medical men, will also disappear in due course. In these circumstances we recommend that the Medical Council of India should be empowered to maintain an All-India Register when the training of licentiates ceases throughout the country. One of us (Dr. Vishwanath) considers that, in such a register, all the existing graduates and licentiates should be eligible for inclusion. With the creation of the All-India Medical Register the functions of the Medical Council of India would approximate closely to those of the General Council of Medical Education and Registration of the United Kingdom in. the definition and maintenance of minimum standards of efficiency for medical education, while the disciplinary functions of the latter body should, we suggest, remain as at present with the provincial councils.

5. We, however, consider it desirable that provision should be made for the right of appeal in disciplinary cases to the Medical Council of India. In the United Kingdom, in certain circumstances, the right of appeal from disciplinary decisions by the General Medical Council lies to the Privy Council. We recommend that, in similar cases in India, a. further right of appeal should lie to the Federal Court of Judicature.

6. In the foregoing paragraphs we have considered the regulation of qualified or registered practitioners. We shall now consider the case of those falling within the remaining categories, *viz.,* those not in possession of qualifications in modern scientific medicine.

7. The need for restricting the right to prescribe drugs in the British Pharmacopeia and to practice scientific medicine by. unqualified and unregistered personnel was emphasized in our discussions, and one of our members (Dr. R. A. Amesur) desired that we should recommend that Government should enact legislation providing that

(i) no medical practitioner shall be entitled to affix the designation "Doctor" before his name unless he is a registered medical practitioner in modern scientific medicine;

(ii) no person shall be entitled to prescribe drugs which are in, the British Pharmacopoeia, especially injections and poisonous preparations, unless he is a registered medical practitioner and

(iii) those who practice the Unani or Ayurvedic system of medicine may style themselves as "Hakims" or "Vaidyas" as the case may be.

8. We are agreed that the public is entitled to know the exact credentials of the persons on whom they call for advice and treatment of disease and to protection against fraudulent imposition, and that it should be impossible for any such person to use a style or appellation suggesting the possession of qualifications other than those actually held by him. It must, however, be remembered that by long established practice the use of the title “Doctor", which in

* Two of our colleagues (Dr. Vishwa Nath and Dr. A. H. Butt) are not in agreement with the recommendations set out above. They state " In our opinion the functions as at present exercised by the Provincial Medical Councils and the AI1-India Medical Council are properly discharged and there is no need for any change ".

strict accuracy should be restricted to the holder of a degree of Doctor of Medicine, has come to imply in the minds of the public any qualified practitioner of modern scientific medicine. Further, the title "Doctor" is assumed with complete propriety by any person who holds the Doctor's Degree of a Faculty of a University, and although the term has come usually to imply in the mind of the public that the holder is a medical practitioner, the title is legitimately used by many among whom are included eminent scientists, legal practitioners and divines. While, therefore, we feel that there is much justification for the principle underlying our colleague's first recommendation, we are unable to make the recommendation to Government in the exact terms proposed by him.

9. We consider, however, that legislation restricting the activities of persons not qualified in modern scientific medicine is desirable and overdue, and we recommend to the Government the propriety of the enactment of such legislation which, we suggest, should provide that no person shall be entitled to use the style or appellation of "Doctor" other than those who (a) hold the Doctor's degree of a Faculty of a University recognized by the State, or (b) are practitioners qualified to practice modern scientific medicine.

10. With regard to our colleague's second recommendation, we agree that the laxity with which unqualified persons prescribe or recommend drugs constitutes a nuisance which often amounts to imposition upon the public, but the imposition is one for which the public largely have themselves to thank. So long as the drug recommended or prescribed is innocuous restrictive legislation seems hardly justified Rule 65(9) of the Drugs Rules, 1945. under the Drugs Act, 1940, provides that a number of poisons, which are included in Schedule H of these Rules, shall not be sold in retail except on and in accordance with a prescription of a registered medical practitioner. But Schedule H does not contain all the poisons enumerated in Schedule E of the same rules. We consider that, if Schedule E can also be included within the operation of Rule 65(9), our colleague's recommendation would be met adequately and that any further restrictive legislation is of doubtful advisability and practicability. The remedy for the abuses which undoubtedly exist seems to us to lie rather in the more rigid application of existing legislation than in the enactment of new.

11. We turn now to our colleague's third recommendation. We have indicated clearly our support to the principle that the public is entitled to know the full credentials of any person who is employed in a healing capacity, and we have indicated elsewhere that we do not feel competent to make any recommendations regarding the organization and regulation of indigenous systems of medicine. Should such recommendations be desired by Government we consider that they should be made by the leading authorities of the systems concerned? We therefore confine ourselves to the suggestion that Provincial Governments, if they decide to recognize these systems, might, with profit, follow the example of the Government of Bombay and enact legislation by which all persons practicing any form of the healing art are compelled to secure registration in a schedule or schedules appropriate to the system in vogue and their qualifications in such system.

12. We would also point out that the terms "Hakims" and "Vaids" are honorable titles of considerable antiquity, and it is by no means clear to us why persons entitled to use these honorable appellations should desire to assume any other.

13. Three of our colleagues (Drs. Butt Narayanrao and Vishwa Nath) desire to make a more positive recommendation than that indicated in paragraph 11 above regarding the training of practitioners in the indigenous systems of medicine and their utilization for promoting public health and medical relief activities in the country. They state "We are of the opinion that the teaching of indigenous systems of medicine should be regulated by the State. The Bombay Medical Practitioners Act, 1938 represents in regard to registration, the medical curriculum and examinations preliminary to registration, a step in the right direction. Practitioners trained and registered under the requirements of the above Act, or similar legislation, should be freely utilized for promoting public health and medical relief in India."

B. Regulation of the Dental Profession

14. The profession of dentistry is as yet almost totally unorganized in India and no legal provision exists for its regulation. The Bengal Dentists Act makes some provision for regularizing dental education and introduces the registration of dentists, but it contains no provision to restrict the practice of dentistry by unregistered persons nor does it compel registration. In the absence of suitable dental legislation to provide for dental practitioners and the prohibition of practice by unregistered persons dentistry as a profession can make little real progress. We are informed that considerable thought has been given to dental legislation in the Punjab and Bombay but that its enactment has been postponed until after the war.

15. We recommend that legislative measures similar to those which we have recommended in respect of the, profession of pharmacy be enacted for the dental profession and that Central and Provincial Dental Councils be created. The latter should be charged with the duty of recognizing training institutions, creating and maintaining dental registers and with the disciplinary regulation of the profession, subject to appeal.

16. As in the case of pharmacists provision should be made for the inclusion in the Provincial Registers of persons who, though not properly qualified, have been engaged in the practice of dentistry for a stated number of years. Thereafter the door of entry to the profession should once and for all be closed to such persons and restricted to the holders of approved dental qualifications.

17. In the draft legislation for the constitution of the Punjab Provincial Dental Board it is suggested that, for the first five years, the Board should consist of nine members to be appointed by the Provincial Government, *viz.,*

(a) Inspector General of Civil Hospitals	1
(b) One Dentist being a member of the Faculty of Dentistry of the Punjab University	5
(c) Five Dentists holding one of the qualifications specified in the Schedule	1
(d) One Medical Practitioner being a member of the Faculty of Medicine of the Punjab University	1
(e) One medical practitioner nominated in their behalf by the Punjab Medical Council	1

After the 5 years during which the foundations "of policy and administration should be laid, it is recommended that the Board should be remodeled on a more selective basis and should elect its own Chairman The constitution then proposed is—

(a) Two Dentists being members of the Faculty of Dentistry of the Punjab University	2
(b) Two Dentists elected by the Northern India Dental Association	2
(c) Three persons elected by and from among the registered dental Practitioners	3
(d) Two registered medical practitioners to be elected by the Punjab Medical Council, one of whom shall be a member of the Faculty of Medicine in the Punjab University	2

We consider that the principle underlying these proposals is sound and that they may appropriately form a model for the creation of Provincial Dental Councils.

18. The Central Dental Council should, as in the case of the Central Council of Pharmacy, be concerned with the direction and co-ordination of the activities of the Provincial Councils, the definition and maintenance of minimum educational standards, which implies the right of inspection and recognition of any training institution, the maintenance of an All-India Dental Register, the disposal of appeals against disciplinary decisions by the Provincial Councils subject, as may be necessary, to the directions of the Federal Court and the regulation of -reciprocity within and without India.

C. Regulation of the Nursing Profession, including those of Midwives and Health Visitors

19. In considering the organization and regulation of the nursing profession we have bad the advantage of the advice of the Nursing Sub-Committee appointed by us and composed of senior members of the nursing profession whose collective" experience combines intimate knowledge of nursing conditions in India, the United Kingdom and the United States, with long experience of 'nursing administration and education. These experts were further fortified by the recommendation of a Conference of Nurses from all parts of India

20. At present the regulation of the nursing profession which includes mid wives and health visitors, is vested with provincial Nursing Councils, of which there are 10 and which maintain registers of persons who have completed approved courses of training in institutions recognized by them for the purpose and have passed the prescribed examination. Persons so registered are entitled to practice their profession primarily in their own provinces, but arrangements for reciprocity with other provinces exist to a degree which varies with the Nursing Council concerned. In addition, certain Examination Boards award certificates of proficiency in Provinces and Administrations where Nursing Councils do- not exists. But these bodies are rightly tending to obtain recognition by, and affiliation to, neighboring Provincial Nursing Councils.

21. There are, however, many unsatisfactory features in the composition and functions of the Provincial Nursing Councils. It seems obvious to us that a Council designed to regulate the training and practice of the nursing profession should consist primarily of members of the profession it designs to regulate. Yet in the

majority of provincial medical councils trained nurses, mid wives and health visitors' are in a minority, and in some they are not included at all. At the Conference of Nurses, to which reference has been made, it was unanimously agreed that 2/3 of the members of each Provincial Council should be drawn from the nursing profession, including mid wives and health visitors. This proposal would leave ample scope for the representation of the medical and educational professions whose advice would be of value to the interests of the nursing profession. We consider that this recommendation is reasonable and accept and endorse it.

22. We are informed that there is at present no uniformity in the classification of divisions and nomenclature in Provincial Registers maintained by the Provincial Councils. This lack of uniformity in the divisions of the registers has led to much confusion, postponement of inter-provincial reciprocity and wrong ideas as to the standard of nursing education. We are informed that this is in the process of rectification and that the majority of Provincial Councils have agreed upon the form which we consider will promote accuracy in the maintenance of the registers concerned. The agreed form is set forth in Appendix 48.

23. While the use of this agreed form will promote uniformity in the Provincial Nursing Registers, there is scope for improvement in respect of the portion which deals with "Nurses Register". This portion as at present designed restricts registration to certificated nurses. In our recommendations for the employment of demobilized nursing personnel from the Nursing Services we have pointed out that there exist considerable numbers of this personnel who have been unable to qualify for the senior certificated course owing to a limited knowledge of English and we have recommended special facilities for them in respect- of the junior certificated course. We are informed that a fair proportion of this class may not in the time available, be able to complete their studies either for the required basic educational qualifications or for the vernacular professional tests. These persons, nevertheless, possess considerable experience in nursing procedures and we consider that it will be advisable, in order that their services may be utilized, as they should be, to create in the Provincial Registers, as has been done in the U.K., provision for "Assistant Nurses", *i.e.,* personnel capable of nursing the sick under the supervision of fully trained nurses (Ref. Nurses Act, 1943, Roll of Assistant Nurses, A.C.I. 1532—given in Appendix 49). We consider this innovation not only desirable, but necessary for the fullest possible use, in the public services, of the available nursing experience in India.

24. The need for an All-India Nursing Council to co-ordinate the activities of the Provincial Councils, to lay down minimum educational standards and to safeguard their maintenance has long been emphasized by the nursing profession itself, and was recommended with emphasis by the Central Advisory Board of Health at its meeting in Calcutta in 1941. We fully agree as to the necessity of such a Council and endorse the recommendation for its immediate creation. We understand that the Government of India is actively considering this matter and that the necessary legislation is in the drafting stage. Our suggestions for the composition of the Central Nursing Council are given in Appendix 50 we consider that

the proposed All India Nursing Council should not be restricted to the maintenance of educational standards.

25. The recognition of an individual institution for the purpose of training of nurses, mid wives and health visitors should continue to vest in the Provincial Nursing Council, but provision should be made for the Central Council to have the right of inspection of recognized training institutions and, in the event of such an institution not maintaining the minimum necessary standards, of withholding recognition to persons trained in those Schools. This can best be achieved by the creation an All-India Nursing Register with appropriate divisions. The Nursing Council Act should possess Schedules for the entry of approved qualifications in general nursing, higher nursing, public health nursing, midwifery and health visiting, and the All-India Register maintained under the Act should have divisions corresponding to the Schedules. Persons trained in institutions which do not, in the opinion of the All-India Nursing Council, come up to the minimum standards prescribed should not be eligible for inclusion in the All-India Register. If the Provincial Council which has recognised such institutions should deem it expedient, notwithstanding the withholding of Central recognition and registration, to continue approval of such persons and their inclusion on the Provincial Register, this inclusion shall have purely local validity within the province concerned.

26. The power of disciplinary action should continue, in the first instance, to be vested, as at present, in the Provincial Councils, but we are of opinion that there should be a right of appeal to the All-India Nursing Council" over their decisions, with additional provision for further appeal to the Federal Court in circumstances similar to those in which in the United Kingdom appeal lies to the High Court against the decision of the General Nursing Council. Questions of reciprocity with other countries should be the concern of the Central Nursing Council and not of the Provincial Councils.

D. Regulation of the Pharmaceutical Profession

27. In considering the organization and regulation of the pharmaceutical profession we have had the advantage of the advice of a Pharmaceutical subcommittee composed of eminent pharmacological and pharmaceutical authorities, which we appointed. For the regulation of pharmaceutical practice, the Sub-Committee advised the establishment of an. All-India Pharmaceutical Council and Provincial Pharmaceutical Councils, regarding the composition of which they made specific recommendations which will be found in Appendix 51 in Volume III of this report. Broadly speaking, their recommendations are to the effect that Pharmacy Councils representative of the pharmaceutical trade, education and other pharmaceutical interests should be set up in each province their functions being as under:—

(1) To maintain a Register of all registered pharmacists of the province and to register the names of newly qualified pharmacists on payment of a prescribed fee;

(2) To maintain the standard of education of students;

(3) To specify the drug establishments or hospitals where apprenticeship training may be undertaken;

(4) To conduct and maintain the standard of examinations;

(5) To maintain such disciplinary control over the practice and profession of pharmacy as may from time to time be necessary;

(6) To advise the Ministry of Health in respect of any regulations for the distribution of drugs, including poisons, dangerous drugs and drugs of addiction and

(7) To advise on any other legislative control that may *be* necessary in this connection.

The functions of the Central Pharmaceutical Council would be to direct and co-ordinate the activities of Provincial Councils. It would include nominees from the 'Provincial Councils, representatives of the pharmaceutical teaching profession and of the medical profession. The Sub-Committee further recommended that, in disciplinary cases, the right of appeal from the decision of the Provincial Council should lie to the Central Pharmaceutical Council.

28. We accept the advice of this Sub-Committee and recommend that Central and Provincial Pharmaceutical Councils of the character recommended by it should be established by legal enactment. We further recommend that in disciplinary cases the decisions of the Central Pharmaceutical Council shall be subject to the direction of the Federal Court to the same extent as that of the Privy Council under the Pharmacy and Poisons Act, 1933 (given in Appendix 52) over similar cases in the United Kingdom.

29. We endorse the. opinion of the Sub-Committee that it is essential to raise the professional standing of those (other than medical practitioners) engaged in the handling of drugs and that, to this end, legislation designed to protect the public from incompetence and to safeguard the interests of the qualified pharmacists should be enacted. The profession of pharmacy should be reserved for pharmacists and the latter should be restricted to their profession and should not be permitted to undertake functions such as prescription of medicine, administration of anesthetics, etc.

30. Concerning pharmaceutical education, the Sub-Committee were of the opinion, in which we concur, that the present standard of training of those engaged in the practice of pharmacy is unsatisfactory and that a revision of the educational system is necessary. We have dealt fully with this subject in Chapter XVIII of this volume where we have discussed the question of pharmaceutical education.

31. We make the following additional recommendations: —

(1) The Drugs Rules 1945 under the Drugs Act 1940 should he brought into force either before or concurrently with the proposed pharmaceutical legislation.

(2) Every institution and commercial firm engaged in the handling of poisonous drugs should be compelled to employ a person who is registered as a Pharmacist or Student Pharmacist, *i.e.,* a person who has either successfully completed the requirements of the licentiate course or the degree course or is undergoing apprenticeship to that end in such conditions as may be prescribed. This envisages a Register of Pharmacists. Such Register will of necessity on its inception include those persons who have been engaged in the profession of

Pharmacy, albeit without due qualification, for a stated number of years, but we consider that such persons before being admitting to the Register should be required to pass a practical examination. Subsequent admissions to the Register should be confined to persons who have acquired the status of graduate or licentiate pharmacist, and to *bona fide* registered students aspiring after those qualifications.

32.The Central Pharmaceutical Council should maintain a Register of all qualified pharmacists in two Schedules. Schedule A should contain the names of graduate pharmacists and Schedule B-of licentiate pharmacists. Each Provincial Council should also maintain a Register which will include the names of student pharmacists and all persons who, by long standing practice of pharmacy without the necessary qualifications, become eligible for admission to the Register on successfully passing a practical examination. These two classes of persons should not be eligible for inclusion in the two Schedules' of the All-India Register.

33.Such considerations, if any, as may arise concerning the reciprocity with foreign countries should be the concern of the Central Pharmaceutical Council.

34.An extract from the Pharmacy and Poisons Act, 1933, of the; United Kingdom relating to the removal of pharmacists from the register is reproduced as Appendix 52.

35.One of us (Mr. N. M. Joshi) holds the view that the power of regulating entry into all the professions dealt with in this chapter should not be given to autonomous organisations which are largely composed of the members of the respective professions and that the final power for taking decisions should rest with Governments, particularly in view of the great need for producing, as fast as possible, large numbers of all types of health personnel. His note is givers below. We understand that, in the Punjab, a local authority has been given power to enforce prohibition in respect of mid wives when it is satisfied that there is a sufficient number of qualified mid wives in its area. We suggest that such a provision will meet the case in regard to other types of health personnel also.

Minute by Mr. N. M. Josh on the chapter dealing with the regulation of the professions responsible for health services

When the greatest need of the country is to multiply as fast as we can the personnel necessary for the medical service of the community including doctors, nurses, mid wives and the dentists, i am not in favor of handing over the final power arid responsibility of laying down standards of knowledge and experience for entry in to these professions and the standards of examinations to the autonomous -organisations of these different professions as is suggested by the majority of the Committee. Taking human nature into consideration-there is some risk of these organisations using their power, in the interest of their particular professions for unnecessarily restricting the entry of fresh entrants into the profession. Moreover while the power and responsibility for the entry into some other professions and occupations is not handed over to their respective autonomous organisations, the anti-social effect of irresponsible and selfish use of the power

by organisations of the various medical services cannot be easily realized by them. I, therefore, suggest that under the present circumstances when the responsibility for the provision of a sufficient number of the personnel for the medical services is on the Government, the final power and responsibility for giving entry into these professions should be with the Government and the power of these autonomous organisations should only be advisory and recommendatory. It is true that these powers are to be given to these organisations by legislatures and the legislatures can also take them away if they are wrongly used. But legislation cannot be changed easily and promptly. It is possible in course of time when the responsibility for entry into all professions and occupations is handed over to their respective organisations and when everyone follows his occupation not for personal benefit but as an act of social service, the proposal of the majority of the Committee may be safely adopted. That in Great Britain and in some other countries such power is given to the autonomous Medical Councils is not a convincing argument. Perhaps that may explain why even to-day the number of the medical personnel is inadequate for the need even in England.

CHAPTER XXV

EMPLOYMENT OP DEMOBILIZED PERSONNEL OF MILITARY HEALTH SERVICES

1. During the present war, the Indian Army has expanded more than 10 times its peace strength and, as a corollary, the military health and nursing services have undergone an expansion which, if not equivalent, is at least comparable to that of the executive branches. In addition to this phenomenal enlargement, the military medical services have undergone a radical reorganization and development dictated by the intensive application of modern science to military medical problems. The consequent medical progress has by no meant been of purely military application, and the intensive development undergone has greatly increased the professional and technical value of the personnel concerned for civil purposes. When the history of the present was comes to be written by an impartial military historian, it is probable that a high place in the administrative achievements of the Allied arms will be given to the phenomenal development of the health services of the Army in India.

2. As a result, there exists in the medical and ancillary services of the Indian Army a great reservoir of personnel whose training and experience render them particularly suited to employment in the civil health services. This personnel comprises Medical Officers (male and female), Dental Officers, (I.A.D.C.), Nurses, and Technicians. We give here a short general description of each category and the civil employment for which they would appear to be suitable. A more detailed analysis is given in a tabular statement for which we are indebted to the Resettlement Section of the Office of the Director General, Indian Medical Service, and which is reproduced as Appendix 53.

I. Medical Officers (male & female)

3. This comprises:
   (a) Specialists "Recognized" and "Graded",
   (b) Graduates,
   (c) Licentiates with or without higher licentiate qualifications,
   (d) Nutrition Experts and
   (e) Blood Transfusion Officers.

(a) *Specialists*

4. Specialists are of two types—"Recognized'' and "Graded". The subjects in which specialization is recognized cover practically the whole field of clinical and preventive medical science and include the related science of physiology. Amongst the "Recognized" Specialists are many who independently of their military "recognition' possess higher qualifications in their specialty and these officers are naturally marked out for higher teaching posts, specialist appointments on the staff of teaching hospitals research work and the direction of institutes and/or units of their specialties These remarks apply also to the Recognized Specialists without the higher qualifications and to the Graded Specialists, but the latter in most cases, and

in some cases the former, will require a further period of post- graduate study and training before being elected to the more senior and specialist civil posts. We are of opinion that, in view of the urgent need of the existing' Medical Colleges, and of those to be created for teachers, the cases of officers from this class who are candidates for civil employ should receive a critical review by a selection committee composed of medical scientists of the highest eminence available and that special facilities should be afforded to individual officers, whom this committee may recommend, for the prosecution of appropriate post-graduate study in India or abroad

(b) *Graduates*

5. This class comprises graduates of the various medical colleges in India some of whom have had experience and practice after graduation. All of them, however, have benefited by an intensive course of instruction in. military and general medical science on their admission to the Service and have subsequently had the further advantage of working under specialist officers and consultants. The latter class includes men of international reputation as teachers and practitioners of their specialties, ranking in ability with the highest authorities among the English-speaking people. With these advantages it follows that the medical graduate should, on the termination of his military service, have gained an experience and poise which would "otherwise have been impossible. He will moreover, have developed that preventive outlook which permeates the military medical services and which we consider to be essential for the Indian medical practitioner of the future. The natural avenues of civil employment for these officers are general duty in the primary and secondary units, school medical service, and industrial medical service, special public health work, rural and urban.

(c) *Licentiates with or without higher licentiate qualifications*

6. With the award of officer status in the Indian Army Medical Corps to licentiates, the latter have taken their rightful place as fully qualified medical officers and have discharged duties in every respect identical with those of graduates. Many of this class, especially those with higher licentiate qualifications, have proved themselves at least the equal of the graduates, and have enjoyed, and fully profited by, the advantages and contacts which have been available to their graduate brother officers. They will emerge from military service as highly competent doctors with the poise and self-confidence that is born of commissioned status in a disciplined service, and their appropriate civil employment will be in the avenues mentioned for graduates without any distinction other than that dictated by individual ability and merit. The possession of higher licentiate qualifications will naturally lead to a more specialist civil employment in say, Tropical Medicine or Hygiene.

7. It is probable, however, that many will wish to avail themselves of the facilities allowed by the Indian Medical Council, and recommended by it to the various universities, to proceed to a medical degree; and we recommend that every facility for this purpose should be granted by the existing medical colleges and those to be created.

(d) *Nutrition Experts*

8. These comprise both graduate and licentiate officers of the Indian Army Medical Corps who have served in military nutritional

units where a notable amount of original and valuable research work has been carried out. They will have acquired, in a special degree, the scientific approach to nutritional problems and their obvious location in civil employ is in public health organizations and the nutrition departments of universities, medical colleges and large hospitals and research laboratories. To those who are licentiates, our recommendations for facilities to proceed to graduation, apply with equal force.

(e) Blood *Transfusion Officers*

9. These again comprise both graduate and licentiate officers who have received special training and gained experience in military blood- transfusion units. The latter are highly organized and fully abreast of the latest developments of this science in which the civil health services are as yet notably deficient. It is necessary that considerably more attention should be given to the science of resuscitation in the larger civil hospitals, and there should be no lack of opportunities for employment of these officers in their resuscitation units.

II. Dental Officers (officers of the I.A.D.C.)

10. The officer cadre of this newly formed corps includes possesses of Western dental qualifications and those holding purely Indian diplomas. The latter are the product of the Indian dental schools and colleges enjoying recognition by the Governments of the provinces in which they are situated. These institutions have received attention in that part of our report which has dealt with the survey of existing conditions, and it is sufficient here to remark that they are of recent formation and have suffered from a scarcity of adequately qualified teaching talent. As a consequence, their qualifications do not yet carry that guarantee of full acquaintance with and proficiency in the latest developments of dental science which are implicit in the recognized Western standards.

11. In that section of our report which deals with professional education, we have emphasized the urgent need for the intensive development of dental education and the establishment forthwith of dental colleges for the purpose. It is on the staff of these new colleges that the officers of the Indian Army Dental Corps possessing Western dental qualifications will find their natural avenues of civil employment, while those possessing recognized Indian qualifications will find their civil outlet in appointments as dental officers in the various hospitals contemplated in our recommendations. Every facility should be given to such officers to proceed to the basic academic dental qualification which we have recommended.

12. It is, of course, contemplated that, eventually there will be a dental surgeon associated with every primary unit, but this will be possible only when the number of qualified dental personnel has greatly increased. In the short-term programme, this provision must of necessity be restricted to the secondary health centers and the travelling dental clinics we have recommended.

III. Nurses

13. Included in this category are (1) fully trained women nurses of the temporary and reserve cadres of the Indian Military Nursing Service, the Auxiliary Indian Nursing Service, and of the Auxiliary Nursing Service, (2) fully trained male nurses registered by the Provincial Nursing Councils holding Viceroy's commissioned rank, (8) partially trained women nurses employed in the Auxiliary Nursing

Service, (4) partially trained male nurses (the so-called Specialist) Improvers of the Indian Army Medical Corps (I.A.M.C), (5) general cursing orderlies of the Indian Army Medical Corps and (6) nursing orderlies with training in special conditions such as venereal and mental diseases, operation-room work etc., dental orderlies, and masseurs.

14. *Fully trained women nurses.*—In the survey section of our report we have drawn attention to the tragic scarcity of trained nurses in India and to the clamant need for their intensive production in large numbers. Existing training institutions must be reorganized and modernized and many new schools established. In the higher ranks of the military nursing services there are Nursing Officers of the Temporary and Reserve cadres who possess special training in and experience of nursing administration and teaching, and it is particularly from this source that the Nursing Superintendents and Sister Tutors of the civil medical schools should be drawn. For those trained women nurses, not possessing these qualifications and experience, ample avenues of employment will be found as ward sisters, staff nurses in hospitals and sanatoria, and in the nursing branches of the public health services which are in contemplation.

15. *Fully trained male nurses.*—These remarks apply with equal force to the fully trained male nurses whose numbers are so limited that it is not unlikely that the majority of them will elect to remain in the nursing services of the Army in view of the favorable terms and conditions offered by the latter.

16. Partially *trained nurses.*—As regards the various categories of partially trained and un-certificated nursing personnel, there are two main divisions (1) women of the Auxiliary Nursing Service and the male Specialist Improvers of the IA.M.C, and (2) the various categories of nursing orderlies of the I.A.M.C. (1) The former division have received their instruction and training in English and, in. the case of the Specialist Improvers at least, possess the basic educational qualification required for the senior certificated course which we have recommended. The majority of the Provincial Nursing councils have recognized the military training and service as qualifying wholly or in part for the courses of training laid down by them; and it will be possible for the majority of this division, after a short period of extra probation and training in the nursing of conditions not covered by military nursing services and passing the requisite examinations, to obtain full certificated status in their native provinces. With the clamant need that exists for trained nurses in the health institutions we have recommended, we do not think there should be any difficulty in finding suitable employment after certification for all personnel of this division demobilized from the Army.

17. The second division nursing orderlies consist of other ranks of the nursing section of the I.A.M.C. In the. Majority of eases their training has been in the vernacular and they have been unable during their service in the Army to obtain the necessary basic .English educational qualifications. They generally possess, however, a high degree of nursing experience and competence, and are in every respect the equals of certificated nurses trained in the vernacular. We understand that the military authorities contemplate establishing a special vernacular nursing certificate for this class of personnel, find we recommend that the syllabus for this "certificate should be

studied and, if approved, should be recognized as qualifying, wholly or in part, for the award of the status of junior certificated nurses which we have recommended elsewhere. The training and experience possessed by this class of other ranks is so valuable that we consider the time is long distant when experienced nurses of this class can be overlooked. In our opinion after further training, where necessary, in conditions not covered by military practice, they are fully entitled at least to the status and emoluments recommended for the junior certificated nurse, after passing the required examination.

18. As stated already the class under consideration comprises nursing orderlies with training and experience in special conditions. They will, therefore, prove of especial value in the staffing of corresponding civil institutions such as mental hospitals, clinics for venereal diseases, ophthalmic clinics, dental clinics and operating rooms.

19. For those who are unable even with further training to pass the requisite examination, but who, nevertheless, possess considerable-nursing experience, as well as the selected members of those categories of personnel engaged by Provincial Governments for emergency duties in connection with famine or air-raid precautions who possess the minimum necessary educational qualifications, it will probably be necessary to create and register a class of Assistant Nurse i.e.,. personnel capable of nursing the sick under the supervision of fully qualified nurses. This measure has been found necessary in the United Kingdom with its comparative wealth of nursing personnel, and would seem inevitable in India with its extreme shortage, if the fullest possible use is to be made of persons possessing nursing experience.

20. *Masseurs,*—This is a class which is virtually non-existent in civil employ, and they will be readily absorbed in the orthopedic-units of the secondary and headquarters hospitals.

IV. Technicians

21. Trained technicians in the generally accepted sense of the term do not exist in civil life in India. It is true that in the laboratories of the various Government institutions there exist persons who by long training have acquired a high degree of competence in the special aspects of this field; but such persons are almost without exception lacking in the basic educational qualifications implicit in the term 'technician' and hare acquired their competence by natural intelligence and through long practice. Their number is so small in relation to the need for trained technicians as to be negligible and the class in question may be said to exist solely in the Indian Army Medical Corps. They comprise Radiographers, Laboratory Assistants and Dispensers, and for some time to come, until technological education in India has undergone the expansion and development which modern conditions require, it is mainly from this class of military personnel that the civil needs must, in the short period, be met.

22. In the foregoing paragraphs we have given a brief review of the classes of medical and ancillary personnel which are likely to be available for civil employment- after demobilization. We understand that the Government of India are already collecting and classifying particulars of all these classes and also of special formations such as Anti-Malaria Units with a view to notifying Provincial Governments as to the number of persons under each class who may be

residents of the province concerned and who will be available on demobilization. We further understand that Medical Resettlement Committees for the purpose of "placing" this .personnel in civil employment are under formation or in contemplation in each province and administration. We suggest that representatives of the Indian Medical Association and the Licentiate Medical Association should be included in such Committees in the Provinces and at the Centre. We welcome these proposals and would emphasize the necessity of their receiving the constant and unremitting attention of the authorities concerned both military and civil, in order that this reservoir of trained talent may be available to the fullest possible extent to the health services of the country. If this opportunity of providing trained personnel for the carrying out of our proposals is allowed to pass without full advantage being taken of it, it may materially delay the initiation of the nation-wide health service for the country which we contemplate. We, therefore, consider it essential that the services of all such personnel should be utilized, except in cases of proved' un suitability.

23. Four of our colleagues (Drs. Vishwanath and Butt, General Hance and Sir Frederick James) desire to lay special emphasis on the re-mobilization for civil purposes of demobilized medical and ancillary personnel and their note is appended.

A Note on Employment of personnel demobilized by the Army by Dr. Vishwanath, Dr. A. H. Butt, Lt.-General J. B. Hance and Sir Frederick James.

We have emphasized from time to time in this report the total inadequacy of doctors, nurses and medical technicians of all kinds. Our proposals involve great increases in all categories. This is bound to take time, and therefore, in the meantime, all available resources should be tapped. With the end of the war many doctors, nurses, etc., will face demobilization. In our view it is essential, having regard to the urgency of the health problems in India, that no one whether doctor, nurse, or medical technician, should on demobilization be faced with even temporary unemployment. In fact we believe-that, to the extent to which it is practically possible, those who are now being demobilized should at once be re-mobilized by the Governments concerned for peace-time employment in India's medical and' health services. Both medical relief and preventive medicine have been practiced at their best in the Indian army, navy and air force. The experience and training acquired through military medical service is equal, if not superior to, any courses which the Governments may provide for the medical cadres of the future. We therefore consider it important that the employment of every member of the medical personnel and health services now being demobilized, except in cases of proved un-suitability, should be secured for the civil medical and health services in the country. This will require close coordination between the military authorities and the civil governments and, above all, an assurance of security of employment subject of course-to continued competence. We understand that steps are being taken in this direction, but we desire to see these fully and immediately implemented and made as widely known as possible.

CHAPTER XXVI

THE ESTABLISHMENT A OF COMMITTEE OF STANDARDS FOR MEDICAL INSTITUTIONS AND EQUIPMENT

1. In view of the heavy constructional programme which will have to be formulated to supply the new accommodation required by our proposals, as well as for structural alterations to existing buildings and for the supply of a vast number of fittings of all kinds to laboratories, health centers, hospitals etc., it seems desirable that some system of standardization should be evolved which will introduce order into what may otherwise well tend to become chaos. With the achievement of order there will be obtained the further advantage of reduced cost that automatically accompanies effective standardization.

2. Sigerist in his "Socialized Medicine in the Soviet Union" tells us that, included among the 20 Standing Committees covering the various medical specialties in the Medical Council of the Commissariat of Health, is a large Committee on standards whose function it is to make typical plans for the construction of hospitals, standardization of equipment etc.

3. We urge the setting up of such a Committee in India and suggest that it should be closely linked with the appropriate section in the Central Ministry of Health. It seems to us that this Committee will, at least in the initial stages, have to be more or less in permanent session.

We feel that for a committee of this nature to be really effective it is essential that it should not be overburdened by the inclusion of a number of highly placed officials who have no special knowledge of, or interest in, the problems which will be presented for solution. It should above all be a technical working Committee reporting' to and advising the Directorate of Health on questions relating to construction and design.

4. The following suggestions in regard to its composition are put forward. It should include:—

(1) architects with experience of designing, and construction of, medical institutions under tropical conditions;

(2) engineers with similar experience;

(3) medical practitioners, not merely as doctors, but as having an interest in, and experience of, design, construction and administration of medical institutions;

(4) laboratory scientists with an interest in the elaboration of laboratory fittings on a transferable unit system and

(5) Members of the nursing profession with a special knowledge of the problems of internal hospital design.

5. In order that breadth of vision may be given to the work of the Committee, it is suggested that a prominent architect should be engaged for a period" of two years to preside over its deliberations, the choice to be guided chiefly by the architect's acquaintance with modern trends in Europe and America. Hospital and institutional

design is a highly specialized type of architectural practice and one of which there are few exponents in India. There is, therefore, a danger that, without really up to date guidance, hospitals may in some cases be erected which are years behind the times. We feel that it is not sufficient to rely entirely upon architects with local experience for the work which will be required. Although the special experience of the latter will be invaluable in carrying into execution the actual drawing up of type plans, the guidance of a mature and widely experienced mind will undoubtedly be of the greatest benefit to them during the early stages.

6. We are aware that it will not always be possible to produce formal type plans of general application for a sub-continent such as India. Questions of sitting, of climate, or the prevailing wind, of soil etc., cannot be answered on a universal basis. Nevertheless we feel that the broad principles of design for different types of medical institutions are capable of a large degree of standardization, which would also serve to secure a reduction in cost and speed in construction.

7. We advise that the Committee, when formed, should give serious consideration to the feasibility of adapting some of the many existing buildings of a temporary nature, which have been set up for war purposes by the military and civil departments of the Central and Provincial Governments, to purposes in connection with our health development programme.

CHAPTER XXVII

RE-EMPLOYMENT OF PERSONS WHO HAVE REACHED THE AGE OF SUPERANNUATION

1. Among the major difficulties which have to be overcome in the successful implementation of our recommendations probably the greatest is the general inadequacy of existing health personnel and, in Borne cases, the entire absence of certain classes of professional and technical workers. Whether it be doctors who are concerned or nurses, health visitors mid wives, pharmacists or dentists, the numbers available in India in relation to the population to be served fall far short of the standards considered desirable in the more advanced countries of Europe and America.

2. In the majority of services under the control of the Central and Provincial Governments it is the normal rule that Government servants are superannuated at the age of 55. It seems to us that' the need for trained personnel is so clamant as to make the rigid maintenance of this practice inconsistent with the requirements of the situation, at any rate throughout the short-term period and probably in the earlier years of the succeeding period.

3. We are, however, anxious to ensure that the retention of persons in service after reaching the age of superannuation should not stand in the way of normal promotions in the service. Nor should any person continue to be employed after reaching the prescribed age limit unless he is considered fit, physically and mentally, to carry on his duties and unless his continuance is considered to be in the public interest. We therefore make the following recommendations:

(i) Such persons should be made to retire before they are re-employed.

(ii) The officer concerned should be brought before a medical board with a view to establishing his physical fitness for further Government service, either in the capacity in which he was employed on reaching the age of superannuation or in any other capacity that Government may ordain. If found physically and mentally fit, his services should be retained on a year to year basis, subject to annual examination by the medical board.

(iii) We desire to ensure uniformity in emoluments for all officers who are thus re-employed. We therefore recommend that, in every case, the pension drawn by the officer should be supplemented in such a way as to make his total emoluments not; less than those be enjoyed at the time of superannuation.

(iv) It should be one of the conditions of such re-employment that the persons concerned will be required to serve in any capacity that Government may deem fit.

(v) Normally such extensions of service should not go beyond the age of 60; but in any special case, where the officer is considered to be of exceptional ability, extension may be granted up to the age of 65.

(vi) We recommend that this rule should apply to all members of the health services.

CHAPTER XXVIII

THE POPULATION PROBLEM

Introduction

1. The steady growth of population, which has taken place in India during the past few decades, has had its repercussion on all such matters as the housing, clothing and feeding of the additional numbers brought into existence from year to year, their education and the provision of adequate measures for the protection of their health. No programme of social reconstruction can therefore, afford to ignore the implications of the population problem. Although a detailed examination of the subject falls beyond the scope of our investigations, a reference to this important subject seems essential because, in a comprehensive survey of the factors which have a bearing on the health of the community, the question of the need for a continuous adjustment between the population and the resources that are available cannot be ignored and should receive serious consideration. *A* Review of the Existing Position

2. The earliest systematic enumeration of the people in India was carried out in different parts of the country between 1865 and 1872. The first synchronous census took place in 1881 and since that year decennial enumerations have been made. The rates of increase during the inter-censal periods have shown considerable variation as
will be seen from the following figures: —

India—percentage rates of inter-censal increase

Period	Rate of increase Percent
1872-1881	1.5
1881-1891	9.6
1891.1901	1.4
1901-1911	6.4
1911.1921	1.2
1021-1931	10.6
1931-1941	13.6

3. During certain inter-censal periods the rate of growth was extremely small. In the two periods, 1872-1881 and 1891-1901, widespread famines were responsible for the low rates of increase. It has-been estimated that, between 1875 and 1900, about 23.74 million deaths took place as the result of famines alone. The pandemic of influenza during 1918-19 was responsible for the low rate of increase (1.2 per cent.) recorded during the period 1911-21. As regards disease, during the first three decades of the present century, cholera deaths totaled nearly 10.75 millions in British India alone while the influenza epidemic of 1918-19 is said to have been responsible for about 14 million deaths in India as a whole. Since its introduction into Bombay in 1896 plague has caused about 13 million deaths in the country, the mortality due directly to malaria is estimated to be at least one million each year. The history of the growth of population in India, therefore, seems to illustrate the contention of

Malthus that disease and famine impose checks on an unlimited growth of population.

4. After 1921 there has been, on the other hand, a steady growth of population in the country. The main reason for this continuous increase during the two inter central periods has been an appreciable fall in the mortality rate as will be seen from the figures given below—

Year	Birth rate per mille	Death rate per mille	Annual excess of births over deaths
1891-1000	33	31	512,277
1901-1910	37	33	933,623
1911-1920	37	34	667,654
1921-1930	33	25	1,996,301
1931	35	25	2,409,846
1932	34	22	3,122,374
1933	36	23	3,447,582
1934	34	25	2,318,472
1935	35	24	2,967,445
1936	36	23	3,455,021
1937	35	22	3,276,081
1938	34	24	2,712,891
1939	34	22	3,180,911
1940	33	22	3,161,376
1941	32	22	3,012,729

It will be observed that, while the birth rate has show no appreciable decline during the period, the decrease in the death rate, particularly during 1921-41, has been more marked. While these rates, which are based on recorded figures for births and deaths, undoubtedly suffer from a degree of incompleteness of registration which cannot be correctly estimated, they serve to show the trend of fertility and, mortality during the period covered by them. Later in this chapter, we have quoted certain estimates of fertility and mortality for the same period, which have been calculated on a different basis, and these also indicate the same trend.

5. The total increase of India's population between 1872 and 1941 was about 54 per cent, while, during the same period, the corresponding rates of increase for the United Kingdom and for Japan were 56 and 136 per cent respectively.* Therefore, India's rate of growth cannot be considered to have been extraordinarily high. Even during the period of highest increase (1921-41) the yearly rate was under

*"Demographic Fact and Policy in India by Kingeley Davis, published in the Milbank Memorial Fund Quarterly (July 1944).

1.5 per cent., while it has been the experience in more than one community that, under favorable conditions, the population doubled itself in about 20 to 25 years, which gives an average rate of growth of 4 to 5 per cent, per year. Although the rate of growth in India is smaller, the massiveness of her population has made the absolute increase a figure of considerable magnitude. For instance, during the 20 years from 1921-1941, she added 83 millions to her population. What is important therefore is not merely the rate of growth but the huge additions to population which are bound to have their repercussion on the existing low standard of living.

The Importance of Population Estimates from the Point of View of Planning

6. From the point of view of planning for the future, whether it be in the field of health administration or in other fields, a forecast of the probable population of the country, including its age and sex composition, during the period which is likely to be covered by the post-war development plans under consideration, is eminently desirable. This forecast is essential in order to provide a reasonably sound basis for estimating such fundamental requirements of the community as food, water-supply and housing while estimates of health and other services should also be related to the population to be served.

7. It is unfortunate that the Government of India decided that the information regarding age, which was collected during the 1941 census, need not be tabulated at the time. Since then various causes arising partly out of the War have made it impossible to tabulate the original data collected at the census. The age and sex composition of a community is fundamental to any investigation regarding the growth of population. In 1944 the Government of India attempted to rectify its mistake by appointing a Population Data Committee is examine and advise Government on the available data relating to the growth of population. This Committee has made certain recommendations which, if followed, will make it possible to construct an age and sex table for the country. When this work is accomplished it may be expected that a forecast of the probable increase of population during the next 20 or 30 years will be made available. In the meantime, we may investigate whether any light can be thrown on the probable trend of the growth of population in India. The Probable Trend of the growth of Population in India

8. The three main factors which influence the growth of population are (1) migration, (2) mortality and (3) fertility.

Migration

9. The effect of migration on India's population has been negligible for sometime past and is likely to be so, at least for some time longer. This is due to the restrictions which the Governments of other countries have placed on the entry of Indians into their territories India's total loss by migration within the period between 1921 and 1931 was about a million and three quarters, a figure which is insignificant in comparison with the total population of the country. We may, therefore, leave migration out of consideration in our discussion of the probable trend of population growth in the country.

Trend of Mortality and Fertility Bates

10. In an interesting study of India's population problem, under the title of "Demographic Fact and Policy in India" published in

the Milbank Memorial Quarterly (July 1944) Kingsley Davis has attempted to compare India rates of fertility and mortality over a period of several decades. Both these rates are based on the assumption that census enumerations are more accurate than recorded birth and death statistics. The fertility rates have been calculated by what is known as the "reverse survival" method, which utilizes an Appropriate life-table to estimate the births during each year of an inter-censal period which, at current survival rates, would give rise to the children aged 0-9 enumerated at the census at the end of that period. The average decennial death rates were calculated by subtracting the inter-censal increase from the estimated births for each decade. His estimates of fertility and mortality rates are given below: —

Year	Estimated	
	Fertility rate	Death rate
1881-1891	49	41
1891-1901	46	44
1901-1911	49	43
1911-1921	48	47
1921-1931	46	36
1931-1941	45	31

These rates also confirm the view which has already been advanced, namely, that the fertility rate has practically remained stationary during the period under consideration, while the death rate declined appreciably between the years 1921 and 1941.

11. The probable trend of the growth of population in India will be determined by the changes that are likely to take place in the death and birth rates in the immediate future.

Death Rate

12. A further, fall in the death rate is bound to occur if the large scale programmes for improving the life of the community advocated by the different post-war planning committees are effectively put into operation. If the birth rate continues at about the existing level, the resulting annual increase in population will be higher than in the past. To indicate the comparatively large increase that may, result from a reduction of the mortality of one section of the population alone, we may refer to the interesting note of Mr. Satya Swaropp in the Census of India, Volume I, 1941, in which "he has attempted to assess the probable effect of a saving of infant life on the growth of India's population at the censuses of 1951 and 1961. On the assumption that the rate of fall in infant mortality between 1921 and 1941 would be continued, he calculated that in 1960 the infantile death rate would be 132 per 1000 live births. In view of the fact that, in certain countries, the rate has already been reduced to half this figure, it seems almost certain that, if a proper health programme is developed, the infant mortality rate in India in 1960 will be

appreciably lower than 132. Mr. Swaroop has shown that, in 1951, the total increase in population resulting from this cause alone will be in the neighborhood of 7 million and, in 1961, about 13.4 millions. From our survey of existing morbidity and mortality in India in the appropriate sections of this report, it will be seen that -at least one half of the existing annual mortality of over six millions in the country is preventable. If our proposals are carried out, there *is* every reason to believe that there will be a saving of at least three million lives every year in British India, which will bring its rate of mortality down to the level of what has already been accomplished in a, number of other countries. In the decennium between 1931 and 1941 the average yearly addition to the population of India as a whole was five millions. An annual saving of three millions in British India as the result of improved health administration will raise India rate of growth to 8 million a year, without taking into consideration any fall in mortality that may be brought about in the Indian States 'through similar health measures. Under such conditions the very large increase of 83 millions, which took place in the 20-year period between 1921 and 1941, is likely to be reached within half that time. A purposeful control of mortality, without a corresponding fall in the 'fertility rate of the community, can thus have far-reaching consequences.

Fertility

13. The rate of decrease in fertility tends to lag behind that of mortality. This was the reason why in the 19th century when a better standard of living and improved health services brought about a marked fall in the death rate, there was a remarkable increase in the population of Europe. In the article referred to above, Kingsley Davis has offered an explanation for this interval between the starting of the fall in mortality and that in fertility. He states that "both reproduction and the preservation of life are indispensable for the continuance of any society, and therefore, through socialization, are instilled as profound values in the minds of each new generation. It follows that with the coming of a more deliberate, innovative control over human affairs, a movement to limit fertility in unaccustomed ways will meet strong opposition as being contrary to an established value, whereas attempts to preserve life, even in unaccustomed ways will meet with approval as being in favor of an established value. It is only after the successful preservation of life has resulted in large families and these large families have proved an embarrassment to the individual in the highly urbanized and mobile structure of modern society, that he seeks a way around the full practice of his high fertility mores. He leaves the customary evaluation intact, but tends to violate it to a certain degree in his own private behavior. Thus the lag of birth control behind death control is implicit in the growing rationalism of modern life, which first attacks the negative value (death), and only later the positive value (high fertility)."

14. India is far behind western countries in respect of both urbanization and modernization. The consequence is that the motive force behind the movement for limiting the size of the family does not operate in respect of large sections of the population. We believe "that among the working classes, the position is quite the reverse. Children are often employed at a comparatively tender age and,

therefore, begin to be of help to their parents. This state of affairs militates against the possibility of volitional control over the growth of the family.

15. Until the economic condition of these sections of the community is raised appreciably, it seems most unlikely that there will arise the desire to restrict the number of the offspring to what the parents consider desirable, in order to ensure a reasonable standard of living for themselves and their children. We have no doubt that the post-war plans for national development will ultimately achieve this end and that India will witness, as in the case of other countries, a definite fall in the fertility rate as the result of purposeful family limitation by individual parents. But before this stage is reached we feel that the immediate effect of measures-designed to reduce mortality may well be to increase the rate of growth of population in the country.

16. Certain other factors, which have a bearing on fertility, are early marriage, the proportion of married women in the community and prohibition of widow remarriage. Marriage is almost universal among women in .this country and the large majority of them are married fairly early in life. While it is true that a gradual rise in the average age for marriage in respect of girls is noticeable among the upper middle and richer classes in the community, it is doubtful. Whether such a tendency is likely to become operative, in the near-future, among the population as a whole. A change in the social outlook, which will be necessary to promote a general rising of the age of marriage for girls, can take place only slowly. Of. the total reproductive period for women, which may roughly be taken as 15 .to-45 years, it has been shown by carefully collected statistics from many countries that the most fertile period is from 15 to 19 years and that the fertility rate grows steadily smaller thereafter. The high proportion of married women in the country and the early age at which they marry must, therefore, be considered as factors favoring a persistence of the present rate of fertility.

17. The existing prohibition of remarriage of widows among large sections of the community helps, in some measure, to check the growth of population. It must, however, be remembered that the present, rate of fertility has been maintained in spite of such restrictions. Assuming, on the other hand, that a change in social outlook relaxed the ban on their remarriage, the effect will be to raise-the fertility rate. Kingsley Davis has estimated that if "the proportion of widowed women in India becomes as low as it was in the United' States in 1930 there would be a net gain of 14 per cent in fertility." An improvement of maternal health and the consequent reduction of sterility that may result from the operation of the proposed health programme will prove to be another contributory factor in increasing the reproductive capacity of women.

18. It would thus seem fairly clear that, at least in the immediate future, there is little reason to believe that there would be a marked fall in the fertility rate of the country.

19. Within the last few years a marked fall in the birth-rate and a definite rise in the death-rate have been noticeable in a number of provinces. Causes arising out of the War are most likely to have been largely associated with these departures from the normal trends

of these rates discussed above and, until further evidence is available, it is difficult to believe that, with the return of more settled conditions, the reduced rate of growth of population which the wartime rates suggest, will continue.

20. In the circumstances indicated above, we may safely conclude that, in the near future at least, the probable trend of population will be in the direction of an accelerated rate of growth.

OUR RECOMMENDATIONS

21. It is our considered opinion in view of what has been said that in the absence of certain natural checks such as famine and disease whose operation will, speaking generally, become more and more limited as our various programmes of social security and improvement in living conditions develop, the growth of population in India will become an increasingly serious problem. We have there fore felt it necessary to set forth its implications and to suggest certain lines on which its solution may be attempted.

22. Growth of population may be prevented from becoming a serious menace to the standard of life of the community in the following ways: —

(a) by emigration;

(b) by increasing the production of national resources and

(c) by a reduction in the rate of additions to population.

Emigration

23. We have already pointed out that the prospects of emigration helping to lessen the pressure of population on the means of subsistence in the country appear to be remote. While we consider it wholly, unjustifiable that Indians should be excluded from certain large empty or sparsely populated spaces on purely-racial grounds we can suggest no practical means, which are likely to bear fruit in the foreseeable future, for removing these impediments. Prejudices die hard and what may seem worthy of condemnation in others may often be transmuted into a virtue if practiced by ourselves.

Increase of Production

24. We recognize that the advance of science, careful planning and concentrated effort on the part of the community to develop the country's resources may make possible the support of a largely increased population on even a better standard of living than that which exists at present. We feel, however, that such measures can constitute only a temporary expedient, because a limit to economic productivity will be reached, sooner or, later, and uncontrolled growth of population must, as far as we can see, outstrip the productive capacity of the country.

Reduction in the Rate of Additions to Population

25. A reduction in the rate of growth of population may be brought about by permitting the death rate in the community to rise. Our social instincts militate against this. A noticeable feature of social evolution has been a growing recognition of the need for the rigorous enforcement of measures intended to conserve life and to promote human happiness. One of the objectives universally

accepted in all civilized countries is a reduction of morbidity and mortality in the community. We have, therefore, to turn to other means for decreasing the rate of growth of the population. They may be considered under three heads, (1) a raising of the age of marriage for girls, (2) an improvement in the standard of living and (3) intentional limitation of families.

(1) Raising of the Age of Marriage for Girls

26. Carefully collected statistics from several countries support the view that the fertility of women is at its highest during the age period 15 to 19. The raising of the age of marriage for girls by a few years from the present minimum of 14 would probably effect a reduction in the birth rate. It will be remembered that in 1929 the Sarda Act, which raised the minimum age of marriage to 14 years, produced a storm of protest in the country. Although there has been a considerable liberalization of public opinion towards this question since then, there is likely to be similar and perhaps stronger opposition to any further considerable increase in the age limit. Legislation, which is too much in advance of what the people are willing to accept, tends to be ineffective and often unworkable. At the same time, it should he the function of popular Governments to educate public opinion and persuade the people to support such legislation and administrative measures as are designed to promote the public good. There are strong physiological reasons for rising the minimum age for the marriage of girls to 16, 17 or even 18.

27. We refrain, however, from making a specific suggestion, partly because we are not unanimous on the point, and partly because we feel that the question is so intimately bound up with social custom and tradition, that the Governments concerned should consider the state of public opinion before taking any decision.

(2) Improvement in the Standard of Living

28. An improvement in the standard of living generally tends to promote a lowering of the birth-rate by helping to create an incentive in individuals to limits the size of their families in the interests of maintaining for themselves and their children a reasonable level of comfort and of enabling the latter, through proper education and through 'the opportunities for earning their living which such education offers, to keep up the standard of life to which they had been accustomed. This improvement in living standards can be brought about only through the mobilization, to the fullest possible extent, of the community's human wealth by measures designed to promote the health and working capacity of the individual as well as of the material resources available in the country. The steps that are now being proposed 'for the reconstruction of national life have these two purposes in view and are, therefore, of the greatest importance from the standpoint of promoting a steady rise in the standard of life of the people Such rise must, however, be a slow process. It implies, besides the creation and functioning of the requisite machinery for developing the country's national wealth, the education of the people in new modes of life and to an appreciation of values, to which they have so far been unaccustomed. While this development goes on, it seems more than likely that such active measures as the. Proposed health services will introduce will result in an

appreciable reduction of the death-rate and thus produce a temporarily acceleration of the rate of growth of population.

(3) Intentional limitation of families

29. If we believe that limitation of families is advisable, we should first ask ourselves the question whether it is possible that this could be secured through self-control. Our answer must be, we fear, not. to any material extent. A limited number of individuals may be under-sexed or may, by nature, be so constituted that they can sublimate most of their sexual urge into intellectual, artistic or other creative channels. But the large majority of mankind, while they may be able to convert a part of their sexual impulse into activities useful to the community, will still have to find satisfaction in the sexual act itself. This seems to us only natural because the sexual instinct is one of the strongest instincts in men and animals, serving as it does, to ensure the continuance of the species. Further, it is likely that an undue repression of the sexual desire may affect the individual's health, because it involves the intentional suppression of a normal physiological instinct. In the circumstances, we seem to be left with birth control through positive means as the only method which is likely to be effective.

Arguments in favor of Birth Control

(1) Intentional control of the size of the family is not without precedent in the history of human communities. Limitation of families has been practised by such communities from time immemorial and the studies of students of the population problem have established various practices such as infanticide, abortion, religious prohibition of sexual intercourse during stated periods and prolonged lactation as some of the methods that primitive communities have practised for the purpose. The modern birth control movement-differs from the older ones in that the methods now practised are safer and permit of wide adoption without offending generally accepted ethical standards.

(2) When child bearing is likely to result in injury to the mother or the child, the practice of contraception needs no justification. Child bearing, although it is a normal physiological function in the case of healthy women, causes an undue strain on those who suffer from certain diseases. For instance, tuberculosis, heart disease, diabetes chronic nephritis and others may so devitalize a woman the added strain of pregnancy and childbirth may cause grave damage-to her health and even endanger her life. There are also many conditions of abnormal health in the mother that may adversely affect the child in the prenatal stage. The prevention of conception will, in these cases, result in infants, with a small chance of survival, not being brought into existence. Further, apart from any specific disease in the mother, continued child bearing with little or no interval between successive pregnancies may itself constitute an undue strain on her physical condition and spacing of births, so as to allow of a return to normal health, may prove to be a definite necessity.

(3) Parents can hardly control the complex socio-economic environment in which they live and, if they decide to have only as many children as they can bring up under what they consider to be reasonable standards of life, it is doubtful whether they can be

blamed. Parents would, therefore, seem to have the right to demand that the State should provide suitable instruction to enable them to adopt family planning.

(4) It does not seem unreasonable to anticipate that, in India, women of the upper and middle classes are likely to attain a considerable degree of social emancipation in the not distant future. There will, therefore, be before them a widened horizon of opportunities for self-expression in professional and other fields. Such women are likely to refuse to adopt the drudgery of continuous child-tearing .Since the intelligent participation of women in the intellectual and social life of the community should be welcome, wise family planning would seem to be essential in order to give women time and opportunity for activities outside their home.

Arguments against Contraception

(1) The deliberate dissemination of knowledge regarding birth control will remove one of the major deterrents to promiscuity, which is the fear that pregnancy will result. A further danger resulting from promiscuity is that of the spread of venereal diseases. Contraceptive methods do not provide a sure safeguard against the spread of such infection and the general use of contraceptives may be fraught with serious consequences to the community.

(2) Conduct divorced from responsibility injures the individual and the community. Whatever progress man has made in the organization of civilized life has been through the continuous fostering of a sense of responsibility for the actions of individuals and of groups in relation to other individuals and groups. A deliberate Attempt to produce conditions which will eliminate or weaken this sense of responsibility should be undertaken only after the most serious consideration has been given to all the consequences that may be expected. For example, there is the danger that the opportunities which contraception provides for pre-marital and extra-marital sex relationships may seriously threaten the sanctity of home life, to the detriment not only of the parents but also of the children.

(3) Birth control practiced during married life is often based on the desire to maintain certain standards of life. This desire may, not infrequently, lead to people preferring a Baby Austin to a baby. If such a practice becomes widespread, the consequences to the State may be serious through the failure to ensure the maintenance of its population in adequate numbers and at the age levels which are -calculated to secure maximum productivity. This danger seems, however, to be relatively remote as regards India.

(4) There are many to whom an interference with nature's processes appears repugnant.

(5) It is at least doubtful whether a contraceptive, which is both efficient and safe has yet been discovered. Numerous contraceptives are widely advertised and used, but their effects on the woman as the result of prolonged use have not been fully investigated and determined. Before the use of contraceptives is actively promoted, it seems essential to ensure that those made available to the people are harmless.

(6) A birth control campaign has certain inherent dangers, which arise from the likelihood of the use of contraceptives being indulged in

more extensively by certain groups of the population than by others. The reason for the practice of birth control is often the desire of parents to' provide for themselves and their children in their turn a treasonably high standard of life. Contraceptive practices are, there-more, more likely to be used by the more Successful and intelligent flections of the community than by those who are improvident and mentally weak. It may also be mentioned that a certain number of defects and diseases are known to be heritable. These include congenital blindness, congenital color blindness and congenital deafness, hemophilia (bleeder's disease, an abnormal tendency to bleed), certain abnormalities' of the nervous system and some forms of mental disorder. The classes which possess many of these undesirable characteristics are known to be generally improvident and prolific. A continued high birth-rate among these classes, if accompanied by a marked fall in the rate of growth of the more energetic, intelligent and ambitious sections of the population, which make much the largest contribution to the prosperity of the country, may be fraught with serious consequences to national welfare.

The Extent to which the State should help to promote the Birth Control Movement

30. Having set out the arguments for and against the practice of birth control we may now consider how far Governments should help to promote the birth control movement. All of us are agreed that, when child bearing is likely to result in injury to mother or infant, there is every justification for the practice of contraception. In such cases it should be the responsibility of Governments to provide instruction regarding contraception in maternity and child welfare centers, dispensaries hospitals and any other public institutions which administer medical aid to women. We also consider that the supply of contraceptive requisites should be made, free of cost, by the State to necessitous women when the practice is advocated for reasons of health. There is also unanimity among us in respect of State action in two other directions, namely, (1) control over the manufacture and sale of contraceptives as in the case of food and drugs and (2) assistance from public funds towards research for the production of a safe and effective contraceptive.

31. Some of us are of the opinion that, on economic grounds also contraception is justified in the interests of the individual and of the community and that the State should provide facilities for imparting knowledge, regarding birth control when desired for such reasons. The others, while they fully appreciate the importance of relating population to the economic resources of the country, feel that the active promotion by the State of contraceptive practices for economic reasons will be justified, in view of objections to it on religious grounds in certain quarters, only if there is substantial support from public opinion.

Practical Difficulties in any large scale Extension of Birth Control

32. In promoting birth control certain serious difficulties will have to be surmounted. Some of them are: —

(1) the large majority of women are not sufficiently educated to be able to learn and practice contraception satisfactorily;

(2) the people are so poor that the cost of placing a safe and effective contraceptive within their reach will be enormous

(3) birth control knowledge will have to be imparted to the women of India by women doctors or health visitors and, as the total number of such personnel in the whole country is at present about 2,000, this, is an impediment of considerable importance and

(4) Certain communities look with disfavor on contraception for religious reasons.

The Extent to which the Proposed Measures are likely to Restrict the Growth of Population

33. For the reasons indicated above a rapid extension of the birth control movement among the people, so as to provide an effective check on the rate of growth of population seems to us unlikely in the immediate future. There also appears to us to be little immediate prospect of raising the age of marriage for girls by legal enforcement A period of widespread educational work among the people, in order to convince them of the desirability of its adoption for health and social reasons, will have to precede any such action. On the other hand, as has already been pointed out, the immediate prospect is that, with the introduction of the proposed health services and of the measures designed to advance the welfare of the community, the rate of growth of population may show acceleration as compared with the past. While recognizing fully the implications of this increase in population we feel that the only practical steps that can be taken are. (1) a relentless pursuit of the measures that are now being proposed for the reconstruction of national life in order to raise the standard of living and (2) the spreading of the knowledge of birth control as far as the limitations imposed by the peculiar circumstances of the country, to which we have referred, will permit.

Genetics and Population Policy

34. The application of knowledge regarding heredity for the development of a healthy and vigorous stock of different species of animals and plants has been made by man with remarkable success in respect of many forms of life. Evidently, a constructive population policy must include within ,its scope the investigation of the possible methods of improving the future composition of the community by the, application of knowledge regarding heredity Such a policy would presuppose adequate information regarding the mechanism of transmission of desirable physical and mental- characteristics as well as of those which should be eliminated. While geneticists have ascertained, in some detail, the ways in which certain defects are inherited, it seems correct to state that, in the wide field of inherited disease and defect, the interplay of both here ditary and environmental factors is of great importance and that,- with the existing knowledge, it is difficult to separate their effects. Further "far too little is known about the inheritance of human- temperament, physique or even intelligence." A pre requisite to the formulation and execution of an effective population policy directed to promote the creation of a healthy and well-endowed community is, therefore, the accumulation of adequate knowledge

* Report on the British Health Services (1937), published by PEP (Political, and Economic Planning).

regarding the hereditary and environmental aspects of the development of man's physical and mental characteristics in the meantime, in some countries, particularly in the United States, laws have been in existence for some time for restricting the reproduction of the unfit by sterilization. In England on the other hand the approach towards this problem has been much more cautious. "The Departmental Committee on Sterilization in 1933, after a very thorough consideration of the case, recommended that legislation should be introduced to make legal the voluntary sterilization of persons with a definite hereditary disease or defect, and they also-considered that, with very strict safeguards, this legislation should be extended to "carriers of these diseases."* In India, so little is known about the distribution of inborn defects in the population that it appears to us premature to attempt-any such legislation at present We believe at the same time, that it is desirable, as a part of the study of the population problem in India, that the part which heredity plays in the. Transmission of valuable human traits and of defects-should be investigated.

Study of the Population Problem

35. In the chapter containing our recommendations regarding vital statistics we have suggested that the Registrar General at the Centre and the Provincial Registrars should publish annual reports on the population of British India and of the Provinces as the case-may be, incorporating in them such information as is available regarding existing conditions and possible tendencies pertaining thereto. We consider it highly desirable that the population problem should be-the subject of continuous study. Apart from the probable trend of population growth, such matters as differential fertility and mortality rates and surveys of morbidity among the various sections of the community are of interest and importance from the point of view of sound administration. .'The- problems of heredity and environment in relation to population policy should also receive consideration. Such studies will have to include investigations "in the laboratory and in the field to explore the causes and antecedents of mental and other defects; and generally to examine fundamental factors affecting the composition and characters of the population".

36. We consider that such studies. Should be organized and conducted on as broad a basis of collaboration as possible. The Registrar General and the Provincial Registrars, with their respective staffs of trained statisticians the Health Departments. Central and Provincial, and. the Departments of Economics, Sociology, Statistics and Genetics in our universities wherever such exist should participate, in our view in these, studies.

* Report on the British Health Services (1937), published by PEP (political and Economic Planning).

CHAPTER XXIX

ALCOHOL IN RELATION TO HEALTH

Introduction

1. The subject of alcohol consumption can hardly be discussed without giving rise to sharp differences of opinion. On the one hand there is a school of thought which considers that its use should, be prohibited in the interests of the individual and of the community. Its consumption, except in strict moderation, may damage the health of the individual, reduce his working capacity and thus affect adversely the economic condition of himself and of those dependent on him. It is urged that total prohibition is in the interests of the individual and of society because the excessive use of alcohol is often associated with violations of public decency and with anti-social acts such as neglect of family obligations and crimes of violence, while the proportion of those who can exercise sufficient control over themselves and limit its use to such moderate amounts as will not cause harm to health is, it is claimed, small On the other hand there is another school of thought which claims that the moderate use of alcohol has its proper place in modern civilized life with the continuous stress and strain which it imposes on the individual. At the end of a long and arduous day a small dose of alcohol promotes that relaxation of tension and that sense of well being and exhilaration which, it is claimed, can do no harm to the man and probably helps him to readjust himself to the work that awaits him the next day. Under existing conditions there is, indeed, a considerable measure of justification for both these schools of thought. For certain members of the community, with adequate mental balance" to restrain themselves and practice strict limitation on the consumption of alcoholic beverages and with comfortable incomes which make the expenditure on drinks no strain on their financial resources, the deprivation of the desired dose of alcohol after the day's work may well be unjustified. On the other hand for the many millions in this country who, after a day's hard toil, do not earn sufficiently to keep themselves and their families properly fed, clothed and housed, the provision of a temptation to throw away a part of their wages for a transient feeling of contentment can hardly be considered as just either from the point of view of the individual or of the community. When it is remembered that these men are ill equipped, through lack of education and of social training, to place adequate restraint on themselves, it will be 'recognized that the damage that can be caused to their welfare and that of their dependents may indeed be great.

Certain Generally Accepted Facts regarding Alcohol in relation to Health

(1) The main action of alcohol is on the nervous system. It depresses the higher centers of the brain. The stimulant action popularly attributed to it is due to a relaxation of tension. With the exception of its action on the respiratory system alcohol never stimulates.

(2) In very small doses it has a sedative effect. It therefore helps to soften the harshness of life and to increase the enjoyment of social intercourse. It produces a temporary sense of well-being which is technically described as euphoria but even a small dose

of alcohol seems to impair the precision-of an act demanding coordination of muscular effort. Jameson and Parkinson in their "Synopsis of Hygiene" state that "Physiological tests on the competence of motor-drivers indicate that driving may be affected by concentrations of alcohol much smaller than those needed to affect the behavior in ordinary clinical tests." In larger doses intellectual processes are impeded or suspended and even coarse muscular movements are rendered difficult or impossible.

(3) As a food it requires no digestion before it is absorbed into the blood. It is, however, of little value as an ordinary source of energy because of its harmful effects on the higher nervous centers. Unlike other foods it cannot be stored in the body to be drawn upon as required. If taken frequently, the human body is never free from it and certain deleterious changes in the liver and other organs are brought about.

(4) In medical treatment alcohol serves but a limited purpose In cases of fainting a small dose of alcohol, by weakening the "excessive check on the heart action exercised by the nervous centers, and, on account of its sedative influence on the higher levels of the brain", may exert a temporary beneficial influence in relieving pain and anxiety. But the general medical outlook regarding the use of alcohol in the treatment of disease has considerably changed. We may sum up the position in the following words of the late Lord Moynihan:—

"It is difficult to realize that 50 years ago the use of alcohol was considered necessary in the treatment of disease and advisable for the maintenance of good health…… Today medical science is of one mind that alcohol, while it has its uses, is' unnecessary and often harmful in the routine treatment of disease.

(5) As regards its effect on mortality, a comparison between total abstainers and non abstainers shows that the former are longer lived. In the book already referred to, Jameson and Parkinson state that "'Insurance companies have found that the expectation of life is some three and a half years less for non-abstainers than for total abstainers." The extent to which alcohol affects longevity depends on the amount consumed by the individual from day to day. Detailed studies of mortality statistics of American and British life insurance companies seem to suggest that:

"1. Moderate users of alcohol, who touch it only occasionally and then in moderation, are probably as long lived as total abstainers, provided they always maintain moderate habits in all phases of living

"2. Those who drink moderately, say, an average of two glasses of beer or one glass of whisky per day, have a higher mortality than the average, partly due to a percentage of them eventually exceeding this moderate consumption.

"3. Those who drink occasionally to the point of intoxication, or have a few protracted sprees yearly are distinctly shorter lived than the average."*

* The article entitled "Longevity and mortality as affected by the use of alcohol by Arthur Hunter in the co-operative study, "Alcohol and Man." published by MacMillan and Co., New York (1932), page 342.

CHAPTER XXIX

OUR RECOMMENDATIONS

Certain General Considerations

2. Drinking has, as pointed out by Professor Sigerist in his book Civilization and Disease'', two main causes. "One is social and economic. Misery, poor living conditions, lack of education and of recreational facilities drive a man into drinking. In Russia in 1913, the annual consumption of vodka amounted to 8.1 liters or more than 2 gallons per person, and the average worker spent over a quarter of his wages on liquor. When conditions of the working population changed after the Revolution the *per capita* consumption of liquor dropped steadily. It war, 4.5 liters in 1931, 3.7 in 1935. Whenever people are hard pressed by a sense of misery and oppression, the more will they be inclined to seek oblivion in drink? And the more-they take to drinking, the more oppressed and wretched they become. Another cause of harmful drinking is to be sought in folk customs and group habits. Since alcohol removes inhibitions, end makes people talk more freely, it became the custom to drink alcoholic liquors whenever people gathered for social intercourse. This alcoholism mondain, as the French call it, affects the most highly education classes. It is not so spectacular, but has nevertheless very deleterious results." A campaign for reducing alcoholism, in the community must therefore take into account both these factors. A rise in the standard of living accompanied by the provision of educational and recreational facilities on as wide a scale-as possible seems to be essential to ensure the success of the campaign. The harmful effects of convivial drinking can be brought home to the people and their cooperation secured for its effective control only through education.

3. The use of alcoholic beverages by human communities date back to the earliest times and it is not therefore surprising that the ill effects of its immoderate, consumption should have been recognized and that strong attempts to restrain and even prohibit its use by various communities should have been made through the compulsive force of religious practice. “It was not, however, until the experimental methods of pharmacology and. psychology revealed; with exactness the nature of the action of alcohol on man's body and mind in health and disease, under dosage of all sizes and conditions) that what may be called the twentieth century attitude towards the drug developed." While oven now, in the press and among the public generally, varying views are; held regarding alcohol as a problem affecting the individual and the community, there exists a body of scientific knowledge on the subject which, if spread sufficiently widely among the people, will provide in due course the most effective means of securing the largest possible measure of agreement towards the formulation and enforcement of a sound policy for regulating" the use of alcohol. From this point of view also we feel that education should be placed in the forefront of our programme of recommendations.

4. The question of dealing with alcoholism raises at once the desirability or otherwise of enforcing prohibition. The latter raises-many questions for consideration which fall outside the scope of enquiry of a Committee such as ours, the main interest of which is

*“Alcohol, its effects on man " by Haven Emerson, M. D. (See the preface).

centered on the health aspect of the alcohol problem. Prohibition on the other hand, introduces various other considerations such as the extent to which its enforcement is likely to be supported by public opinion, the possibility of certain evils coming into existence in the event of the introduction of this measure being much in advance of public opinion and the administrative aspects of the problem, including questions of finance and of effective preventive work. These matters fall clearly outside the range of our investigations. "Nevertheless, from what has been said earlier about the importance, from the standpoint of health, of restricting the consumption of alcohol to the greatest possible degree of moderation, we cannot absolve ourselves of the responsibility to put forward certain proposals directed to serve this purpose. We feel, at the same time, that legislative and administrative measures, however cleverly designed and enforced cannot achieve the desired result unless the intelligent cooperation of the people can be secured in the enforcement of these measures. From this point of view also education of the people should form an essential part of the campaign against alcoholism.

Although we do not propose to express any definite view either for or against prohibition we shall 'refer to one aspect of this subject at a later stage in this chapter.

Education regarding the Fundamental Facts In relation to Alcohol

5. We understand that, in the United States, all but two States ({Arizona and Wyoming) have laws requiring that all schools supported partly or wholly from public funds should include, in their curricula for children, courses of instruction dealing with the effects of - alcohol and other narcotics on the human system. We desire to see such provision made in this country also. In providing such instruction it is in our view essential that all the fundamental facts relating to alcohol should be made available to the school children and that controversial views, which are generally based more on personal predilections than on a dispassionate review of the problem, should be avoided as far as possible. The socio-economic aspects of the problem should not, however, be ignored A body of scientific facts presented without any reference to their social consequences fail to stir the imagination of most people and particularly of children. We would suggest that proper text-books on the subject should be prepared by some central agency and that they should be translated into all the languages of individual provinces by the respective Provincial Governments. In doing so it should be possible to include material, diagrammatic and narrative, which will give a local color to the different subjects that, is discussed. We strongly believe that such instruction will, when carried out over a period of years, create a new generation of men and women who will help to solve the problem, both in its individual and community aspects, without the handicaps of undue inhibition against, or of established predilection for, alcohol arising probably from the social surroundings in which they are brought up. Such instruction is equally necessary for the older members of the community, although we believe that the results obtained are not likely to be so lasting as in the case of children. The approach towards educating the adult in respect of alcohol will have to be developed on a wide basis and the methods to be adopted

* “Alcohol, its effects on man by Haven Emerson, M. D, (See the preface).

will form a part of the general programme of action against alcoholism which will be discussed in the succeeding paragraphs.

Certain Other Suggestions for Combating Alcoholism and for Restricting Alcohol Consumption to the Minimum

6. The alcoholic habit is in this country largely confined to certain sections of the population. The Mohammedans are prohibited its use and certain sections of the Hindus have also similar religious, restrictions placed on its consumption. These restrictions are in the main being observed by these sections of the population. There still remain large groups among the Hindus to whom the use of' alcohol is not forbidden. This is also the case with some other communities in the country. Among these the consumption of alcohol exists to a greater or lesser extent while, in urban areas, a loosening of the traditional restrictions brought about by modern conditions has introduced the drink habit to a varying extent among all classes of the people. In the villages, on the other hand, the force of custom and the pressure of local public opinion have in the main tended to limit the consumption of alcohol mostly to those who have been, traditionally accustomed to it. We would therefore suggest that the problem may be dealt with somewhat differently in the towns and in the countryside.

The Urban Areas

7. Here, apart from the special features to which we referred in the previous paragraph, another important factor is, in many cases, the presence of varying proportions of industrial workers, who live either interspersed among the general population or in colonies mainly inhabited by persons of their own class. The drink habit is widely prevalent among such workers, soma of the reasons being (1) that they are largely drawn from those sections of the community to whom the use of alcohol is not forbidden and that they might therefore have been accustomed to its use in the villages from which-they migrated, (2) that these workers live often without their families and are therefore likely to find few opportunities for relaxation after a hard day's work except through the escape from reality that-alcohol offers and (3) that they have more money to spend on drink through the larger wages they earn.

8. In referring to the social and economic aspects of the drink problem we have pointed out how unjustifiable it is that many millions in this country should spend a proportion of their wages on drink, although their earnings are quite insufficient to meet such- essential needs, in respect of themselves and of those dependent on them as adequate food, clothing and housing. Industrial workers, and other relatively large sections of the population in urban areas belong to this category and measures designed to restrict the use of alcohol by them cannot be commended too strongly for adoption for health and economic considerations.

9. In the first place there should be an attempt to restrict the consumption of alcohol on as wide a scale as possible. The necessary measures will include the strict control of existing liquor shops, and the severe restriction or even the prohibition of the opening of new shops, particularly in the areas occupied by the poorer sections of the community including industrial workers. There should be a reduction in the hours of sale of alcohol. The alcoholic content of the beverage sold in such places for public consumption should be

within certain limits to be prescribed by the Provincial Government The aim should be to make places, where alcoholic beverages are permitted to be sold, decent establishments where a high standard of cleanliness is maintained and suitable alternative refreshments are provided, so that a man can take his family and order food along with drinks. The experience in the West is that, under such conditions the excessive consumption of alcohol is generally checked.

10. Side by side with such measures there should be provision for the supply of non-alcoholic beverages Milk bars, tea and coffee shops, if run on cheap lines, can help to divert the carving for intoxicating drinks into less harmful channels. The desire for alcohol at the close of the day is perhaps partly stimulated by the lack of opportunities for other forms of useful activity, including recreation and- social intercourse. We believe that, if the proposed post-war educational developments will create facilities for adult education, general and technical, on a wide scale and if increased opportunities for successful careers are provided to ambitious men and women, the incentive for conserving and spending money and energy on lines- likely to lead to self-advancement will become sufficiently strong to prove a deterrent to the wasteful pursuit of transitory pleasure to which alcohol opens the way. Side by side with such developments there is abundant room for the promotion of social and recreational facilities. These coupled with the opportunities for educating the grown up population in the fundamental facts relating to alcohol, which the adult education programme will provide, are bound to bear fruit in the course of years by increasing the active cooperation of the people in the campaign against alcoholism.

11. In the meantime the control exercised by Governments over the sale of alcoholic beverages to the people should be as stringent as possible. The Provincial Governments obtain today a substantial part of their revenues from alcohol. We agree with Haven Emerson that "little economic merit can be claimed for a system of taxation which raises any considerable part of the public revenue from the sale of alcohol, unless, as a part of the plan of government, this tax money is used to reduce the extent of facilities for the sale of alcoholic beverages; to promote observance of restrictive laws; to meet the cost of prevention, care and treatment of alcoholism among the considerable number of persons whose health will be injured and whose earning capacity will be reduced by the use of alcohol". It seems important to us that a substantial part of the money so derived should be devoted by Governments in this country to measures de signed to prevent the spread of alcoholism and to rehabilitate those whose health and working capacity have been injured by the excessive- use of alcohol.

Treatment and Rehabilitation of Alcoholics

12. The treatment of acute and chronic alcoholism is essentially a medical problem and adequate provision should be made for it as a part of the general health programme. The rehabilitation of the chronic alcoholic is, however, a much wider problem. Here, apart from any medical measures that may be adopted, there is the question of re-educating him to a saner outlook on life and his responsibility towards those who are dependent on him. The rescuing of the growing children in the home of such an individual from the degrading effects of brutish behavior resulting from drunkenness is an

equally important matter. We would suggest that the establishment of houses of detention for those alcoholics who require segregation and treatment, medical and social, should receive serious consideration. Legal sanction for such detention will, no doubt, be required and the question of acquiring the necessary powers should also be considered. The dependents of the person so detained may, in many cases, require support until the individual is set free and his earning capacity is re-established. The provision of such medical aid as may be necessary can also be made a part of the organization established in the house of detention

13. In this sphere of activity voluntary effort can render valuable help. The rescuing of the individual back to normality can be helped enormously by properly directed efforts in which social workers and religions leaders should, in our view, take an active part. Indeed, the possibility of organizing and maintaining such houses of detention under voluntary auspices, with generous support, financial and technical wherever necessary, from the State may well be considered. If such institutions are maintained under private auspices, the State should ensure that they attain certain definite standards of efficiency which it prescribes.

The Rural Areas

14. The problem is essentially the same in the rural areas as in the towns. A point of difference, however, is that in the former the alcoholic habit is, in view of the pressure of local public opinion, likely to' be confined mostly to those classes which are traditionally accustomed to its use. It should be comparatively easier to pick out chronic alcoholics in a village than in a town. The development of a strong public opinion against drunkenness should also be easier. But the provision of medical and other remedial measures and the mobilization of voluntary effort to promote activity on the lines indicated in the previous paragraph may not prove as easy in rural areas as in the larger urban centers. While therefore we recognize that the problem of alcoholism in the rural areas is no less important than in towns we would suggest, in the first instance, the inauguration of the campaign against it on the elaborate lines suggested above in a few of the larger cities and towns in each province and its gradual extension to other parts later.

Certain Common Measures for Urban and Rural Areas

15. We wish, however, to see certain parts of the programme extended simultaneously all over the country. These are a strict control of existing liquor shops towards the maintenance of better standards of cleanliness, a reduction of the hours of sale and the regulation of the alcoholic content of the beverage sold to the public for consumption. The opening of new shops should be severely restricted and even prohibited in close proximity to the areas where industrial and other workers live.

16. The consumption of alcohol, during working hours, by persons engaged in certain occupations is dangerous to themselves and to others. For instance pilots in charge of aero-planes and motor drivers should be forbidden alcohol during working hours It should be an offence punishable under the law for such persons to be found in a drunken state when engaged in their respective occupations. 'We have given these only as typical instances and there are many others in which the use of alcohol should be equally forbidden in the interests of the community.

17. There is abundant evidence to show that the efficiency and output of the industrial worker are lowered by alcohol and that the accident rate is raised. The enforcement of total abstinence (luring working hours appears therefore to be of advantage from the point of industry and of, workers alike

Recent Prohibition Experiments in certain Provinces

18. A few years ago certain Provincial Governments introduced prohibition in limited areas within their territories and the scheme worked for varying periods in the different provinces. In 1940 the Central Advisory Board of Health, after reviewing the reports which it received from the provinces concerned, came to the conclusion that the material available would not justify judgment being passed either in favor of or against prohibition. The desirability of assessing the effect of prohibition on the health of the inhabitants of the areas concerned was, however, stressed. As far as we are aware prohibition has been "abolished in all the provinces. If the scheme is revived at a later date we would strongly recommend that the following suggestions should be adopted.

19. The effects of prohibition on the health of the people may be twofold, (1) the direct effect on habitual drinkers as the result of alcohol being withheld from them and (2) the indirect effect on the health of their dependents through more money being made available for food, clothing and other necessities. We would, therefore, suggest that, before prohibition is introduced in an area, a preliminary survey should be carried out for the purpose of assessing the health and economic condition of the habitual drinkers and their dependents. Such a survey will obviously have to be limited to certain selected towns and villages in the area concerned. These should be taken on the basis of such selection as will secure for them collectively a representative character in respect of the area under prohibition. This preliminary survey should be followed by Annual surveys which cover the same individuals and their dependents. Information collected on these lines for a few years should make it possible to draw reasonably satisfactory conclusions regarding prohibition in relation to the health and general welfare of the people.

20. It is desirable that such surveys should be conducted on a fairly- uniform basis in the different provinces so that comparable data may be obtained. We suggest that the Central Health Department should, in consultation with the authorities in the provinces in which prohibition was tried, draw up detailed instructions regarding such surveys and make them available to Provincial Governments Other Narcotics

21. While we have confined ourselves to alcohol in this chapter there are other narcotics the consumption of which also produces harmful effects .Examples are, opium charas, ganja and others. *Attar* as we are aware there is no reason why their use should not be prohibited except for medicinal purposes. We recognize that there are varying proportions of the population in the. Different provinces who are accustomed to their use for long periods. We would suggest a gradual reduction in the quantities of these drugs which are made available to the people and their complete elimination from public consumption within a period of about ten to fifteen years.

* See page 354-361of "Alcohol and Human Life" by C. C. *We*eks (Second edition) 1938, published by H. K. Lewie and Co. Ltd., London.

CHAPTER XXX

THE INSTITUTION OF A MEDICAL LIBRARY SERVICE ADEQUATE FOR THE REQUIREMENTS OF INDIA

1. It is evident that- one of the prime needs of an intellectual community is an effective library service, and this is more especially the case where a highly technical subject such as medical research is concerned. India is at a great distance from the other centers of scientific thought, and she must inevitably draw her knowledge of advances and discoveries from books and journals published in other countries. She must, in that respect, be largely self-contained and her need for a .full and well-selected Central Library is even greater than that of Europe and America, where facilities for the dissemination of knowledge are more highly developed. Such a central library should be fully adequate both for reference and for the purposes of research. It should be linked with a chain of smaller regional libraries in the more important centers of medical research and education in the provinces, by a flexible and extensive service of exchanges.

2. We are told that there is at present no medical library in India with more than 11,000 volumes, apart from bound numbers of periodicals, while the library in the office of the Director General Indian Medical Service contains only 20,000 volumes. India has not the funds to enable her at present to institute a library comparable with the more important medical libraries of the world, such as Washington with its 420,000 volumes,- Leningrad with 600,000,-Paris with 500,000 or even with that of the Royal Society of Medicine in London with 160,000 volumes. It seems to us, however, to be not unreasonable that we should recommend the establishment in India of a Central Library, providing, in the first instance, for the housing of 60,000 to 100,000 volumes.

3. A medical library of about the size that we have in mind, exists on the Pacific Coast of America.—the Lane Medical Library at Stanford University housing, in 1928, a representative collection of 65,000 volumes along with a large collection of pamphlet and reprints, and subscriptions to- 460 Journals from all parts of the world. Owing to the' geographical situation of California and its distance from the more important centers. in the Eastern States this library has to be relatively self-contained. The problem -was in many ways parallel to that which India will have to face and a study of the manner in which it was dealt with should prove profitable to us. The special building which houses the library cost 160,000 dollars (Rs. 4 1/2 lakhs) with reading-room space for 140 readers and stacks to hold 75,000 volumes with ample provision for expansion. The budget for the year 1927-28' was 17,150 dollars-(half lakh) exclusive of heating and lighting. Of that sum 9,792 dollars were allotted to salaries and 8,357 dollars to books, periodicals and binding.

4. We feel that the following quotation from Miss Janet Doe's recent "Handbook of Medical Library Practice" (1943) sums up so well our own conception of what is required from a library of this type that we reproduce it from the original text.

> "A well-rounded medical library must consist in major part of periodical material, including journals and serials

of many types If is a reversal of the proportion obtaining in a general library to find these forming the backbone of the medical collection. They contain the first recorded reports of scientific discoveries and additional ever mounting comments, criticisms and supplements on these reports. After periodical literature, monographs and text-books on special subjects are a necessary part of the library. Reference books of many varieties are needed. Some of these are the same as those in general use but the majority varies widely from this list. Pertinent medical information, whether it be published in government documents, society or hospital reports, health surveys, vital statistics, medical school catalogues, congresses or elsewhere, must be discovered and placed in the library. All this literature must cover material on the basic sciences, on general medicine and on the specific fields in medicine in the proportion needed by the library clientele. It must represent not only publications in the English language but outstanding contributions from all over the world, either in original or abstract form. Moreover, background material, as histories, biographies and auto-biographies, rate books, incunabula, economic studies and ethical discussions are desirable in a well equipped library. Such a collection ' should also, if possible, include works of cultural value for medical readers and books with a medical background written by physicians and non-medical writers

"The intensive research usually in progress at a medical school presupposes a library stocked with data or work done on medicine and its accessory sciences in all countries and all ages. This means' it must contain or have access to a large collection of periodicals, monographs, atlases, textbooks, encyclopedias and other literature to supplement the professor's private library and the student's textbooks. In addition, the library must be able to supply medical and vital statistics, book publication information, biographical data about physicians and scientists and other reference material upon request. And finally it may be called upon to provide writings on the history of medicine and cultural medical literature. This is an ideal. If it cannot be attained in 'practice it must be approximated by purchases emphasizing the general and special interests of faculty members."

Obviously the collection and supervision of such a library must -be the work of a highly trained librarian specializing in medical literature. Miss Doe offers valuable information as to the availability of such librarians in the U. S. A.

"To staff these libraries, workers have been enticed or commandeered from general and special libraries, from library schools, from the clerical staff of Hospitals or medical schools and from doctors' offices. Seldom indeed, has it happened that a medical library could secure a librarian with both professional library training and education or experience in the medical sciences.

Library schools have been unable to give the requisite specialized training—though two or three now offer brief extension courses; it is only within the past few years that internships in medical libraries have become possible, and they are still few. An exceptionally definite need exists, therefore, for a means of liaison between the medical library and the sources from which it must draw its librarian."

5. We are fully persuaded that, in order to put the proposed service on a sure foundation, it will be necessary for an exploratory survey of the facilities existing in the United Kingdom, the United States and elsewhere to be undertaken by one or two officers (of whom at least one should be an Indian) deputed for the purpose.

A suitable programme for such a deputation is suggested below: —

(1) A study of medical libraries in the U.S.A., such as those at New York,- Boston, Philadelphia, Baltimore, Washington and the Lane Library at Stanford University. Contacts, inter alia, with the-Rockefeller Foundation, the Surgeon General's Library, the Medical-Library Association and publishers of medical literature,

(2) A study of the medical libraries in the U.K. especially those of the Royal Society of Medicine, the Royal College of Surgeons and the Radcliffe Library at Oxford. Also the National Central Library regarding exchange facilities between libraries.

(3) Investigation of .the scope of translation, abstracting, Photostat and micro-film services' from United States of America and United Kingdom.

(4) Obtaining rough estimates from various sources of. Estimates of cost in respect of buildings, staff and other facilities which should be provided.

6. We suggest that there should be, in London, a correspondent of the library, who will watch its interests in the West and act as the channel both of information and of supply in matters concerning the library service.

7. If an experienced librarian proves to be immediately available, we suggest that he should be engaged on a preliminary two or three years. Contract-to work in the first instance in the Directorate of Health together with the Indian officer who has made the survey, in establishing a catalogue of books and periodicals to form the nucleus of the Central Library, and initiating courses of training for' junior members of the library staff and also in consulting with the architects engaged on plans for the library..

8. The Central Library we envisage is one chiefly devoted to research and should be established in association with the All-India Medical Institute we have recommended. When similar Medical Institutes are established elsewhere they will have to be provided with their own libraries. A case can be made out for an entirely separate Library in the Directorate of the future civil Health Service, devoted to general reference and to the problems of administration. We prefer, however, to leave that question, together with proposals for the establishment of regional libraries, to the consideration of the Governments concerned after the survey which we have suggested has, been completed, when fuller and more exact information will be available.

9. In a recent number (February 1945) of the Bulletin of the History of Medicine, Professor Henry E. Sigerist drew attention to the need for an Institute of the History of Medicine in India, and made the following suggestions which are germane to the present subject and worthy of consideration when planning is to be done.

> "The staff will require tools for research, that is, collections and among them primarily a collection of books. The library of the Institute will include the basic medico- historical literature—books and journals—medical texts in the best editions and translations available, and as many reference books as possible. It should also
>
> include a number of non-medical books such as basic books on political, social and economic history, the history of philosophy, religion and other disciplines, books that are constantly needed for general orientation.
>
> "The Institute will in addition collect other documents per-training to the medical history of India, manuscripts, photographs, portraits, objects such as instruments, etc., and it may consider the creation of a museum of indigenous drugs."

He suggested further that "it would be advisable to build the Institute of the History of Medicine in connection with, or as an annex to the Library, so that the. Technical administration of the Institute could be handled by special employees of the Library. This would permit the staff of the institute to devote all their efforts to research and the teaching of students"

CHAPTER XXXI

LEGISLATION

1. We do not propose to make here any detailed survey of the health legislation which is likely to be required for the execution of the programme we have set forth in the preceding chapters of this volume of the report; or to make specific recommendations regarding the manner in which the existing laws should be amended or added to. We feel that we are' not competent to undertake either of these tasks satisfactorily. As regards the survey we believe that, even if it be carried out by a more competent agency than ourselves, the full range of legal enactments which may be required is not likely to be covered. Legislation and administration constitute parallel lines of state activity, which continually act and react on each other, with the result that the implementation of our programme is bound to produce, as it proceeds, the need for legal powers in-various directions, which .can hardly be anticipated at this stage. The manner in which changes in the existing law' should be made to suit the requirements of our health scheme is a matter for consideration' by Governments in consultation with their legal advisers. While-recognizing these facts we consider it desirable to give in one place a brief review of the more important matters on which we have recommended "legislation in different parts of our report. The present chapter attempts to carry out this purpose.

2. Our proposals for legislation fall mainly under four heads:—

(1) those which are intended to assist in the formulation and; execution of a national health policy based on the largest possible agreement between the Central and Provincial Governments and to promote the co-ordination of central and provincial health activities;

(2) those which are designed to improve health administration in the provinces, particularly the standard of such administration in local areas;

(3) those which are required for conferring special powers on health authorities to enable them to carry out their duties more effectively than they are able to do at present and

(4) those which are intended to give statutory sanction to certain-proposals of ours, *e.g.,* the All-India Medical Institute, certain aspects of which involve departures from existing administrative procedure.

We shall now refer briefly to the legislation likely to be necessary under each of these heads without going into a detailed consideration of the reasons for the establishment of the institutions or approval of administrative policy for which legislative sanction is to be sought. These matters have been discussed in the relevant places. We shall refer only to the more important matters requiring sanction by the legislature.

The Formation and Execution of a National Health Policy and the Co-ordination of Central and Provincial Health Activities

3. We have recognized the retention, as far as possible, of the large- measure of autonomy which the provinces have enjoyed for some time past, and have suggested that the Centre should promote the development and co-ordination of provincial health activities mainly

by the provision of machinery for mutual consultation in the formulation of the national health policy, by a system of grants-in-aid from " Central Funds to the provinces and by the offer of technical advice to provincial health authorities. At the same time, we feel that, in certain exceptional cases, it may become necessary for the Centre to intervene in the affairs of a province in the interests of the country as a whole, and have therefore suggested that the Centre should be armed with the necessary legal powers. Our proposals to serve these purposes include:—

(a) the establishment of a statutory Central Board of Health with the Central Minister of Health as the Chairman and Provincial Ministers of Health as members.

The Board will provide the forum for the discussion and formulation of a health policy based on the largest measure of agreement between the Centre and the Provinces. Through the opportunities that it will provide, for mutual consultation, the Board will assist in the carrying out of that policy with the least possible friction between the different Governments. The 'Board will also be responsible for recommending, to the Central Government, proposals for the distribution of grants-in-aid to the provinces.

(b) a modification of the existing relationship between the Centre and the Provinces to the extent of enabling the former to intervene, without delay and effectively, in provincial health administration in circumstances in which dereliction of duty by a Provincial Government jeopardizes the health not only of those under its charge but also of those living in adjoining areas outside its jurisdiction.

Normally the Centre is expected to act, on such occasions, only after consulting the Central Board of Health. Where immediate action is required, the Central Government should report to the Board the measures it has taken with the least possible delay.

Improvement of Provincial Health Administration

4. Here the measures necessary relate mainly to the sphere of health administration in local areas and statutory sanction will be required for: —

(a) the creation of district health boards on the lines indicated by us;

(b) the provision of power to the provincial Minister of Health to enforce compliance by the Board with the policy laid down by him;

(c) in the areas under our scheme (i) the provincialisation of all classes of health workers and (ii) the conferment upon the Governments of other provinces, of powers similar to those that exist in the province of Madras whereby the head of the Public Health Department can recommend specific action by local health authorities in particular directions for the improvement of the public health and can enforce their execution, subject to the concurrence of the Provincial Government, and

(d) in the areas outside our scheme, the provincialisation of those classes of health personnel which are now recruited and maintained

on a provincial basis in Madras and the provision of the powers referred to in (c) (ii) above

Special Legal Provision for enabling Health Authorities to catty out their duties effectively

5. We have discussed, in the different sections of our report, the legal provisions which are required, in our view, to supplement the existing powers of health authorities in order to. Improve health administration in its different branches. We shall refer here only to two matters, namely, the control of infectious disease and an improvement of the purity and quality of the community's food supply. In doing so our main purpose, is to emphasize the part the Central Government can play in both these fields of health administration to supplement what is now being done by Provincial Governments.

(a) *Control of infectious diseases.*—In view of the urgent need for controlling the incidence of malaria, which is by far the most important among the infectious diseases prevalent in India from the point of view of morbidity and mortality, we consider it essential that adequate powers for the enforcement of anti-mosquito measures should be conferred on local health authorities on the lines indicated by us. Another important provision is that primary vaccination and revaccination against small-pox should be made compulsory in areas where these provisions do not exist at present.

In the chapter on quarantine we recommended that, in order to prevent the inter-provincial spread of infectious disease, the Central Government should be given certain legal powers based on existing practice in the United States. We described briefly the powers which the Federal Government in that country possesses for this purpose and suggested that any modification of the existing law in India, which may be required to enable the Centre to perform such functions, should be brought about without delay.

We also recommended the drawing up, 'by the Central Health Board in consultation with their health advisers at the Centre and in the Provinces, of a memorandum of instructions to be followed by the Central and Provincial Health Departments in order to promote joint action, on an effective basis, when inter-provincial spread of infectious diseases threatens or actually takes place. These instructions can be given legal sanction if they are issued as statutory rules by the respective Governments under the powers they already possess or which they propose to acquire under a consolidated Public Health Act, the enactment of which we have recommended in Chapter XVII of this volume of the report.

We consider that action on the lines indicated above is essential for strengthening the existing law for the control of infectious diseases.

(b) Control of the purity and quality of the community's food supply.—Besides the recommendations we have already made under these heads in the relevant- places, which relate mainly to provincial action, we may put forward here a suggestion for enabling the Central Government to play an important part in this field in so far as inter-provincial trade in food is concerned. This recommendation is also based on existing practice in the United States. In that

country, while the fixing of standards of purity and their enforcement in respect of all articles produced and consumed within a State are the responsibilities of the Government of that State, any article which seeks to enter the field of inter-State commerce must conform to standards prescribed and enforced by the Federal Government. The latter possesses powers of inspection, within the State, of the premises and of the processes of manufacture of the article concerned, as well as of taking samples there and at all the stages of storage, transport and distribution to the public. In India many articles of food enter the field of inter-provincial commerce. Most of the dairy products *(e.g.,* ghee, butter, khoa) come within this category as well as edible oils and tea and coffee. The enforcement of the food adulteration law is a provincial responsibility and, although the Central Advisory Board of Health recommended the adoption of common standards by all provinces, it is understood that such uniformity has not been attained in respect of all articles of food. Moreover, the enforcement of the food adulteration law in the provinces leaves much to be desired. In these circumstances, if the Centre can enter the field and assist in the enforcement of the required standards, an advance will undoubtedly be made in the control of food adulteration.

As regards an improvement of the quality of the community's food supply, we .drew attention in the chapter dealing with nutrition to the Agricultural Produce Grading and Marking Act which is intended to facilitate such improvement and pointed out that a number of agricultural food products is already under the operation of this Act. We also recommended there that the principles of this Act should be made applicable- to articles of food other than agricultural. This is an Act of the Central Legislature and we suggest that the Central Government should give early consideration to this recommendation. Legislation in connection with certain other proposals of ours

6. The more important of these proposals are those relating to: —

(a) The All-India Medical Institute;

(b) The establishment and maintenance of institutions in the provinces for providing, on an all-India basis, postgraduate training facilities of a high order and

(c) The Central and Provincial Water and Drainage Boards.

In regard to the All-India Medical Institute we have recommended that the recruitment of its staff should be through its Medical Faculty consisting of its professors and not through the channel of the Federal Public Services Commission. This departure from the normal procedure for recruitment and certain other matters in connection with this Institute would seem to require statutory sanction.

Similarly, our proposals for developing postgraduate training facilities to serve the needs of all provinces involve questions of administrative control and apportionment of cost between the Centre and the Provinces as well as the establishment of an all-India body, the Central Committee for Postgraduate Medical Education, which will have technical control over such institutions. Statutory regulation of these matters will probably provide a more satisfactory and stable basis for central and provincial co-operation in this field than administrative arrangements entered into by the Central Government with individual Provincial Governments.

The Central Drainage and Water Board will make recommendations to the Central Government regarding inter-provincial questions of water conservation, drainage and river pollution and we have suggested that the Central Government should be granted power, in cases of emergency, to give an interim decision, which will be binding on the provinces concerned, while the final decision should lie with the Federal Court or an Arbitration Board as may be provided for. Statutory sanction will obviously be required for bringing into existence such a Water and Drainage Board and for regulating the procedure to be adopted in connection with its recommendations, involving as this may often do, matters of vital importance to more than one province in the country. Further, the Board, if it is to carry out such investigations as may be necessary for making its recommendations to the Central Government, will require in many cases access to records and the evidence of individuals, which it should be in a position to secure as a legal right. From this point pi view also statutory sanction for the establishment of the Board and its functioning seems essential.

The reasons advanced above for legislation to regulate the establishment and functioning of the Central Water and Drainage Board apply also to the Provincial Boards. Questions relating to water conservation and river pollution may involve the interests of individuals and organisations and statutory provision for the settlement, on an equitable basis, of disputes regarding such interests is therefore essential. Here also the Provincial Government may be empowered to give an interim decision which will be binding on the parties concerned, while the final decision may be left to the Provincial High Court or an Arbitration Board as may be provided for.

Consolidated Public Health Acts Central and Provincial

7. The enactment of consolidated Public Health Acts by the Central and Provincial legislatures is considered necessary. Such Acts can serve at least three purposes, namely, (1) to bring together existing legal provisions relating to health, which are scattered over various enactments, (2) to modify those sections of the law which require change in the interests of promoting efficient administration and (3) to incorporate the new provisions which will be necessary for the development of the health programme we have recommended. At the Centre provisions relating to health are found in about 40 different Acts while, in the provinces also, a varying number of legal enactments contain such provisions. The need for the modification of existing law may be illustrated by a reference to leprosy. In certain provincial Local Self-government Acts the provisions for dealing with this disease are the same as those provided for such acute and rapidly spreading infections as cholera, small-pox and plague. Leprosy is, on the other hand, an endemic disease and spreads slowly from person to person as the result of opportunities for fairly prolonged and close contact. In the case of the common infectious diseases the patient requires segregation and treatment for a limited period only and, speaking generally, he becomes non-infectious as soon as he is cured. In leprosy, on the other hand, the period of infectivity is prolonged and uncertain and the patient requires segregation and treatment for an extended period, which may run into months or years. Administrative procedure for dealing with leprosy and with the other diseases of a more acute and rapidly developing type will

necessarily differ and the legal provisions which are required will also differ. This fact has been recognized in the province of Madras, where leprosy was recently removed from a group of infectious diseases for which common provision exists in the Madras Public Health Act and special measures were provided for dealing with it. The enactment of the proposed consolidated Public Health Acts, Central and Provincial, will also provide an opportunity for incorporating in them all the new provisions- our health programme will require, including such changes as may be necessary in the existing relationship between the Central and Provincial Governments and between the latter and local area administrations in respect of their health functions.

8. Such legislation at the Centre and in the Provinces may take some time to materialize. In the meantime it is recommended that the Central Government should undertake to bring together in a single publication all the existing laws relating to health, both Central and Provincial.

CHAPTER XXXII

THE FINANCIAL IMPLICATIONS OF OUR PROGRAMME

Introduction

1. Our proposals for the development of health services in the country, on lines which follow modern trends, consist of a long-term plan, which is intended to provide health protection of a comprehensive nature to the whole "population, and of a" shorter plan to be completed in a period often years which, while following the broad outlines of the larger scheme is more restricted in scope, both in respect of the health services to be rendered and of the population to be served. In defining the objectives to be reached on the completion of the long-term programme, we have been mainly guided by the consideration that the health services provided for the people should be "comprehensive in their scope and .that they should be based on the latest developments that the science and art of medicine have to offer. On the other hand, in drawing up our proposals for the short-term programme we have given careful consideration to the instructions of the Government of India on the financial aspect of planning, which were embodied in the terms of reference defining the scope and nature of the enquiry entrusted to us. The Government of India said that it was desirable "to plan boldly, avoiding on the one hand extravagant programmes which are obviously incapable of fulfillment and on the other halting and in adequate schemes which could have no effect on general health standards and which would bring little return for the expenditure involved". It has not been an easy task to harmonize the requirements of a scheme sufficiently broad-based to ensure the realization of a progressive improvement in the public health with the need to bring its cost within such limits as are likely to be considered reasonable from the point of view of the country's financial capacity. We decided that our guiding principle should be that the short-term plan we advocate must be such as would produce, through its implementation, an appreciable improvement in the health of the people within the period of completion of the plan. This is a matter of even greater importance than questions of cost. We were strengthened in this view by two considerations. One is that planning would defeat its purpose if no satisfactory results could be demonstrated. We felt that the consequences of such failure might even be a setback, for many years to come, in the development of health administration in the country.

2. The other consideration is that, if the rates of expenditure incurred by Provincial Governments on their medical and public health departments were to be taken even as an approximate guide to determine the financial limits of our proposals, any attempt to build a satisfactory scheme of health services for the people would be foredoomed. In 1939-40 the per capita expenditure on these two departments together was He. 0-1-7 in Bihar, Re. 0-1-9 in the United Provinces, Be. 0-2-1 in the Central Provinces, Be. 0-2-8 in Orissa and Be. 0-2-7 in Bengal. The highest figure for such expenditure was Be. 0-5-9 in the province of Bombay In order to as certain what an improved health service is likely to cost it may not be out of place to examine the corresponding expenditure for certain other counties, where the provision for affording health protection

to the people exists on a much larger scale than in India. In Great Britain, the per capita expenditure on medical and public health activities was, in 1934-35, about Rs. 54-8-11 and in the United States the corresponding figure for 1938 was Rs. 51-6-0. We recognize that the expenditure incurred by a country on its health services must necessarily depend on its national income and that India compares, in this respect, very unfavorably with the two countries, mentioned above. Estimates of national income are likely to show a varying margin of error, however carefully they are made. Nevertheless, we may take for the purpose of comparison, certain estimates for these three countries from sources to which we may reasonably attach value The figures are given below and the sources —from which they are derived are also indicated: —

Country	Income per capita			Source of information
	Rs.	A.	P.	
British India	62	3	3	The National income of British India, 1931-32 by Dr. V.K.R.V.Rao.
Great Britain	1,049	6	5	Journal of the Royal Statistical Society, Vol. 103, 1840, page 617.
United States	1,371	7	3	Monthly Labor Review Vol. 53, 1941,page 114.

The per capita income of the United States is about 2'2 tunes that of India and that of Great Britain about 17 times. Even after making due allowance for the much higher national incomes in those countries, India should spend annually about Rs. 3-3-0 per head of the population if her expenditure on health services were to bear the same relation to national income as the amount spent in Great Britain in 1934-35 on health measures bore to her own national income. On the basis of a similar comparison with the United States India's per capita expenditure on health should be Rs. 2-5-0. From our survey of modern trends in the organization of health services in Chapter IT of this volume, it will be seen that the authorities in those countries are dissatisfied with the provision for the health protection of their people which the figures quoted above represent, and that expenditure on a generous scale to augment the existing services is under active consideration. In these circumstances we felt that, if India desired to develop a modern health organization, a scale of expenditure much in advance of what the provinces have been incurring, was inevitable. We therefore decided to plan our short term programme undeterred by the cramping limitations of existing provincial expenditure and with our main consideration directed to the development of a plan which would ensure, through its execution, a demonstrable improvement of the public health We hope to show Inter that' the scheme we have put forward is, even from the financial point of view, in no way extravagant or unreasonable. Though the expenditure involved will undoubtedly be many times that now incurred by Governments in the country, the responsibility which rests on the authorities concerned for finding the necessary funds is in our view, inescapable, if a raising of the genera level of health and prosperity among the people is to be secured and maintained. We cannot emphasize too strongly the fact that one of the most effective means of increasing the national productive-capacity is improvement of the public health.

The Estimates of Cost

8. Having formulated our proposals we examined in some detail their financial implications. The detailed estimates we have prepared are given as appendices 54 and 55 in volume III of this report. These estimates are necessarily of a tentative character owing to a number of reasons, some of which are indicated here. In view of the conditions arising out of the war and 'its aftermath, building cost can hardly be predicted with any degree of precision for the period during which this programme will be implemented further, the cost of construction varies in different parts of the country. Moreover, as we shall point out later, the cost of construction under the supervision of the Public Works Departments of Governments seems, in many cases, to be definitely higher than the cost of construction under other auspices and, if steps can be taken to reduce the former to any appreciable extent, we have no doubt that there will be a considerable decrease in the total expenditure we have shown in our estimates. For reasons which we have stated in the chapter describing our short-term programme, the rates of pay we have assigned to the different classes of health workers are, in some cases, based on existing scales and, in others, on scales we have arbitrarily proposed. In view of the importance and complexity of the problem of fixing reasonable and adequate scales of pay for all public services, we have suggested the investigation of this matter by an *ad, hoc.* Committee Any decisions that Governments may take on the advice of this committee will, if there be wide departures from the scales of pay suggested by us, materially affect the financial implications of our proposals because, as regards the recurring cost, expenditure on the pay of the health staff constitutes by far the largest proportion of the total.

4. We give below, in tabular form, the main items of our estimates of cost separately for the first five years and the second five years of the short-term programme.

Approximate estimates of cost in respect of the proposals of the Health Survey and Development Committee for British India

NON-RECURRING EXPENDITURE

	First five years Rs.	Second five years Rs.	First ten years Rs.
1.Personal health services including the directional Organisations associated with the Ministries of Health at the Centre and in the Provinces	80,88,00,000	118,64,00,000	199,52,00,000
2. Professional Education	22,45,00,000	19,86,00,000	42,31,00,000
3. Expenditure on other items	50,42,00,000	50,20,00,000	100,52,00,000
	153,75,00,000	188,70,00,000	342,45,00,000
4. Centre	9,22,00,000	11,32,00,000	20,54,00,000
6. British India as a whole.	162,97,00,000	200,02,00,000	362,99,00,000

Recurring Expenditure

1.Personal health services including the directional organisations associated with the" Ministries of Health at the Centre and in the Provinces	116,10,00,000	250,02,00,000	366,12,00,000

Recurring Expenditure—continued.

	First five years Rs.	Second five years Rs.	First ten year Rs.
2. Professional Education	32,00,00,000	35,24,00,000	67,24,00,000
3. Expenditure on other items	4,54,00,000	12.32,00,000	16,86,00,000
4. Leave Reserve	7,83,00,000	15,03,00,000	22,91,00,000
	160,47,00,000	312,66,00,000	473,13,00,000
5. Centre	9,63,00,000	18,76,00,000	38,39,00,000
6. British India as a whole	170,10,00,000	331,42,00,000	501,52,00,000
Payment towards amortisation of non-recurring expenditure	25,70,00,000	74,54,00,000	100,30,00,000
Total recurring expenditure	195,86,00,000	405,96,00,000	601,82,00,000
Average annual expenditure	39,17,00,000	81,19,00,000	60,18,00,000
Average estimated population of British India	315 millions	337.5 millions	326.25 millions
Annual per capita expenditure	RS A. P. 1 4 0	RS. A. P. 2 7 0	Rs A. P. 1 14 0

5. Before we examine the above figures we wish to make certain general remarks regarding these estimates of expenditure. We consider that the figures give an approximate estimate of the cost that our proposals will involve, although it has not been possible, for certain reasons, to include every item of expenditure Likely to be incurred under our scheme. For instance, in regard to the organization of school health services, we have suggested that two teachers from every primary school in the" areas in which these services will be introduced, should be trained to carry out certain remedial and preventive duties under the supervision of the school medical officer and that each of these teachers should be given a monthly allowance of Rs. 10. In the absence of information regarding the number of teachers for whom provision will have to be made, we have not included this item of expenditure in our estimate. On the other hand, some saving in the estimated cost of these proposals is likely to be secured if neighboring provinces can cooperate in the joint development of certain types of institutions and in the establishment of facilities for the carrying out of various purposes under our scheme. The endemic and epidemic diseases prevalent in fairly wide stretches of contiguous territory in neighboring provinces are likely to be the same and room therefore exists for the creation of common facilities for combating such diseases. For instance, certain institutions like leprosy hospitals and homes for incurables can be established to serve more than one province. The manufacture of the biological products required for treatment and prophylactic purposes can be undertaken jointly. Again, in the provision of training facilities for various types of health personnel, there may be room for co-operative effort. In regard to the establishment of such organisations as drainage and water boards, it may be advantageous for neighboring provinces to establish a common body instead of maintaining separate boards. With one or more rivers passing through the territories of both, questions relating to the conservation of water and river pollution' are dealt with more satisfactorily through co-operative action than by separate

effort. We anticipate, therefore, that, in the development of our proposals, there is likely to be the promotion of joint activity on a wide scale among neighboring provinces and that such activity will help to reduce, to some extent, the cost indicated in the estimates given above. In the circumstances we believe that the figures may be taken as a reasonably correct over-all estimate of the expenditure likely to result from the execution of our scheme during the first ten years of the programme.

6. Our estimates do not give the expenditure that individual provinces are likely to have to incur as the result of the implementation of our proposals. They are statements of probable expenditure for the entire eleven Governors' Provinces. The cost to be incurred by the Central Government in respect of Centrally Administered Areas has not been calculated in the detailed manner in which we estimated provincial expenditure. The total population of these areas at the 1941 census was 1-6 millions as against 294.2 million for the 11 Governors' provinces. Conditions vary considerably in the Centrally Administered Areas, *e.g* Delhi Province and Baluchistan, so that the formulation of a common plan appears to be difficult. We consider, however, that the suggestions made in respect of the Governors' Provinces can, with suitable modifications, be utilized by the local administrations under the Central Government for making plans for their respective territories. As regards the Delhi Province, we have suggested that the Central Government should demonstrate in this area the implementation of our proposals as well as of the proposals of other post-war planning Committees, in order to promote a many-sided attack on the problems of community life We have suggested for this province a scheme which provides a larger health staff than that proposed for the other provinces.

7. We have also recommended that the Central Government should be responsible for the establishment and maintenance of an All-India Medical Institute which will provide, when it is fully developed, teaching facilities of a high order, undergraduate and post-graduate in all branches of professional education in the field of health, and will also make provision for the training of research workers. A tentative estimate of the cost of the Institute places the non-recurring expenditure at about Rs. 2 crores and the recurring charges at about Ra. 40 lakhs per year.

8. Taking into consideration the difference in the population between the Centrally Administered Areas as a whole and that of the eleven provinces it is considered that, on a rough estimate, the cost in respect of all health developments in the areas for which the Centre is directly responsible and the expenditure on the proposed All-India Medical Institute may together be somewhere between 5 and 7 per cent of the total cost for the provinces, recurring or non-recurring. We have therefore taken 6 percent, as the basis of our calculation for Central expenditure.

9.. We have pointed out, in more than one place in this report, the need for the Central Government to promote health development in the provinces by grants-in-aid and through the provision of technical advice to provincial health authorities. The additional financial burden which the Centre will have to bear if these suggestions of ours are accepted' will, we anticipate, be settled by

mutual consultation between the Centre and the Provinces. Whatever this additional burden may prove to be, it is now incorporated as part of our estimates for provincial expenditure.

10. We have given the total anticipated expenditure only under certain broad heads, namely, personal health services, professional education and a group comprising other items of expenditure. Non- recurring and recurring costs have been shown separately. It seems to us most likely that large scale expenditure on capital works will 'be met by Governments from loans and not from current revenues, especially as the financing of the recurring cost of a scheme such as ours and of those of other post-war reconstruction committees will place an extremely heavy strain on the annual budgets of Governments. On the assumption that non-recurring expenditure will be met from loans, we have provided for their amortization in a period of 30 years at 3 1/2 per cent, interest, which we were advised to take as a reasonable basis for calculation. We have assumed that the non-recurring cost to be incurred in the two five-year periods of the short-term programme will be spent in equal amounts each year. The anticipated annual expenditure shown above includes amortization charges also. The probable cost of our proposals therefore makes provision for the yearly recurring expenditure as well as for that which will be incurred, during the first ten years of the programme, in the repayment of the loans, which are to meet the non-recurring expenditure to be undertaken during that period.

11. For calculating the per capita cost an estimate of the probable growth of population in the country during the period likely to be covered by the short-term programme is necessary. The required data for making such an estimate are at present lacking, and any estimates which are put forward must mainly be conjectural. The enumerated population of British India at the 1941 census was about 295 millions and, as the war has ended and the implementation of our proposals may therefore be expected to start without delay, we have assumed that the average population of British India during the first and second five-year periods of our programme will be 315 million and 337.5 million respectively. On the basis of these populations, the per capita costs are: —

First five years	Second five years	First ten years
Rs. A P.	Rs. A. P.	Rs. A. P.
1 4 0	2 7 0	1 14 0

It may perhaps be of advantage to indicate what the recurring cost is likely to be during the first and tenth years of the programme. These are Rs. 1-3-0 and Rs. 2-13-0 per head of the respective populations, which have been estimated as 300 and 345 millions.

12. We have shown that, even after making allowance for the low national income of our country as compared with those of Great Britain and the United States, the rate of expenditure on medical and public health services in India should be about Rs. 3-3-0 and Rs. 2-5-4 per head of the population respectively. Our proposals involve, during the first ten years of their execution, an anticipated expenditure of Rs. 1-13-6 per head of the population. We therefore claim that the programme of health development we have put forward cannot be considered extravagant from the financial point of view. When it is remembered that, in Great Britain and the United States, a further rise in public expenditure on health services has been considered essential in the interests of the people, we hold that there

still greater justification for considering that the demands which our scheme will make on the public purse are in no way unreasonable.

The Financing of the Health Programme

13. We realize, at the same time, that even the proposed per capita annual expenditure of about Rs. 1-4-0 during the first five years-of the programme' will require that Provincial Governments should make provision, for spending on health measures, amounts many times in excess of what they are bud getting now. The latest available figures for the combined -expenditure on provincial medical and public health departments relate to 1944-45 and they are given-below.

Combined expenditure on medical relief and public health activities in the provinces during 1944-45

Province	Expenditure *per capita* in annas	Expenditure on medical relief and public health expressed as a percentage of total provincial. expenditure
Madras	6.2	4.7
Bombay	10.9	4.6
Bengal	7.1	5.7
U.P	3.9	4.9
Punjab	6.1	5.1
Bihar	3.2	7.3
C. P. and Berar	2.8	3.1
Assam	5.4	6.2
N.W. F. P.	7.7	5.0
Orissa	3.4	6.9
Sind	8.2	2.6

While a small number of items of existing expenditure in the provinces on health administration will fall, within the cost of the scheme we have put forward, the vast majority of them will not and broadly speaking, the expenditure involved in the execution of our proposals will be in addition to what the Governments, Central and Provincial, are now incurring on their medical and public health departments, which as shown above is generally on a meager scale.

14. A reference to the last column of the above, table will show that the expenditure incurred by Provincial Governments on health measures, curative and preventive, constitutes but a very small fraction of their total annual expenditure, the percentage ranging from 2.5 to 7.3. On the other hand, the corresponding percentage in Great Britain during 1934-35 was 20.4 and in the "United States 13.8 during 1938. It is obvious that Governments in India have, in the past, devoted an unduly small proportion of their incomes to health administration and there is therefore every justification for demanding that the ratio of expenditure under this head must be raised considerably. Government should be prepared to increase "the money spent on health to at least 15 per cent of the total expenditure. If this is done a considerable advance will have been made in providing the required funds for the proposed health programme. At least in one province (Madras) the local legislature has laid down (Section 127 of the Public Health Act) that every municipality "shall earmark not less than 30 per cent of its income from all sources other than Government grants, for expenditure on the advancement of public-health in its local area, including expenditure on medical relief,.

and every district board or panchayat shall similarly earmark not less than 12 1/2 per cent of its income from such sources." We recommend that it should be a statutory obligation on Governments to spend a minimum of 15 per cent of their revenues on health activities.

15. The revenues of certain Provincial Governments have shown a marked increase during recent years. New sources of income, such as the sales tax, have been tapped and they have helped materially to increase the resources of the Governments concerned. We do not feel competent to discuss taxation policy or to recommend specific- forms of raising revenue. We believe, however, that we are correct *in* holding that the existing resources of Governments can be augmented to a material extent and we recommend that Governments should make every effort to increase their revenues and to devote a substantial part of them to the development of the health and other programmes, which are essential for the betterment of national life and the increase of the nation's wealth.

16. This discussion of the ways in which Governments should: attempt to solve the financial problem in connection with the implementation of the health programme will not be complete without attention being given to a matter to which reference was made earlier in this chapter, namely, the high cost of construction when it is carried out under the supervision of the Public Works Departments of Governments. We consider it highly desirable that a searching enquiry should be instituted into building costs and the data on which Public Works Departments base their estimates. Instances have been brought to our notice in which private agencies have been able to carry out new building work at less than 50 percent of the estimates prepared by the Public Works Departments. We do not venture to base any criticism on such information, but there is undoubtedly a widespread and persistent belief that the, Public Works Departments are unduly expensive agencies for the construction of public buildings. This calls for careful investigation, as considerations having far-reaching consequences for development in many spheres are involved.

17. In this connection we wish to draw attention to the report of a Mission which was sent to the United States of America by the Ministry of Works in the United Kingdom in 1944. The object of the Mission, which was an expert body, was to study American practice with a view to securing in Great Britain in the postwar period (a) increased speed and output (b) reduced building costs, (c) improved' standard of equipment and finish, and (d) improved conditions for operatives.

An enquiry into building methods and costs, with special reference-to the Central and Provincial Public Works Departments in India will now be helpful, particularly if, with the enquiry, one or two of the representatives of His Majesty's. Government's Mission to the United States were associated as well as some non-technical persons.

18. The need for the rapid development of, public health and medical facilities is insistent. In our view it is a matter of vital importance that Governments should do their utmost to make the health services extend as far into the rural areas as circumstances permit, even though such an expansion might involve the utilization, in the beginning, of improvised buildings which do not fulfill accepted' standards It is in the public interest that such limited financial resources as may We available should, in the early years, be spent

on personnel and equipment rather than on elaborate buildings, if money is not available for both. For instance a dispensary located in a mud hut can give useful and effective service, provided it is clean and sanitary.

Construction will, nevertheless, be necessary. Such construction should be the most economical compatible with the requirements essential for medical institutions. It should be planned so as to permit of future expansion, if required and of such alterations as the progress of medical science may dictate. At all costs, elaborate and ornate buildings should be avoided.

19. In our view the short-term health programme set forth in the different chapters of this volume of the report provides the minimum standard of achievement in the different fields of health development, which Governments should keep before themselves as the objective to be attained within the first ten years of the execution of the scheme. The existing state of the public health in the country is so unsatisfactory that any attempt to improve the present position must necessarily involve' administrative measures of such magnitude as may well seem to be out of all proportion to what has been conceived' and accomplished in the past. This seems toils inevitable, especially because health administration has so far received from Governments but a fraction of the attention which it deserves in comparison with other branches of governmental activity. We believe that we have only been fulfilling the. duty imposed on us by the Government of India in putting forward this health programme, which can in no way be considered as extravagant either in relation to the standards of health administration already reached in many other countries or in relation to the minimum requirements of any scheme which is intended to demonstrate an appreciable improvement in the health of the community. For reasons already set out, we also believe that the execution of the scheme should not be beyond the financial capacity of Governments.

20. "We desire to stress the organic unity of the component parts of the programme we have put forward large-scale provision for the training of health personnel forms an essential part of the scheme, because the organization of a trained army of fighters is the first requisite for the successful prosecution of the campaign against disease Side by side with such training of personnel, we have provided for the establishment of a health organization which will bring remedial and preventive services within the reach of the people, particularly of that vast section of the community which lies scattered over the rural areas and which has, in the past, been largely neglected from the point of view of health protection on modern lines. Considerations based on inadequacy of funds and insufficiency of trained workers have naturally necessitated the suggestion that the new organization should first be established over a limited area in each district and later extended as and when funds and trained personnel become increasingly available. Even with such limitations the proposed health service is intended to fulfill, from the beginning and in an increasing measure as it expands, certain requirements which are now generally accepted as essential characteristics of modern health administration. These, are that curative and preventive work should dovetail into each other and that in the provision of such a combined service to the people, institutional and domiciliary treatment facilities should be so integrated as to provide the maximum benefit to the community.

There should also be provision in the health organization for such consultant and laboratory services as are necessary to facilitate correct diagnosis and treatment. Our proposals incorporate these requirements of a satisfactory health service.

21. We have drawn attention to these aspects of the health programme because we feel that it is highly desirable that the plan should be accepted and executed in its entirety. We would strongly deprecate any attempt, on the plea of lack of funds, to isolate specific parts of the scheme and to give effect to them without taking into consideration the inter-relationships of the component parts of the programme. Our conception of the process of development of the national health services is that it will be a co-operative effort in. which the Centre, acting with imagination and sympathy, will assist and guide a coordinated advance in the Provinces. We therefore look forward to a pooling of resources and of personnel, as far as circumstances permit, in the joint task that lies before the Governments.

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K. C. K. E. RAJA, *Secretary.*

New Delhi, 18th December, 1945.

*With the proviso that he dissents from the section on population problem.
+With the reservation that he is unable to subscribe to some of the recommendations in the report

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