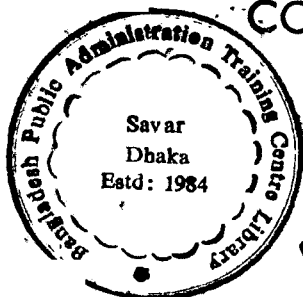




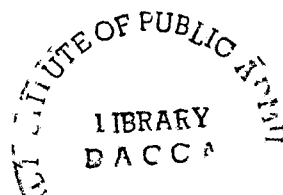
REPORT OF THE HEALTH SURVEY AND DEVELOPMENT COMMITTEE



Vol. IV

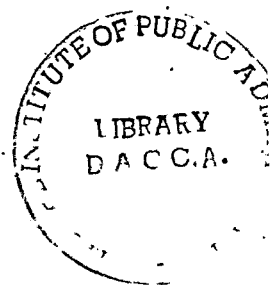
Summary

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HEALTH SURVEY AND DEVELOPMENT COMMITTEE

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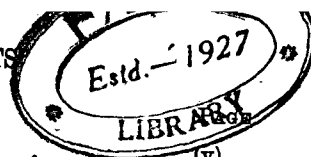
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FOREWORD

In this foreword an attempt is made to present, in a nutshell, the main principles underlying the Committee's proposals for future health development in the country. These are:—

1. No individual should fail to secure adequate medical care because of inability to pay for it.

2. In view of the complexity of modern medical practice, the health services should provide, when fully developed, all the consultant, laboratory and institutional facilities necessary for proper diagnosis and treatment.

3. The health programme must, from the beginning, lay special emphasis on preventive work. 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. So long as environmental hygiene is neglected, so long as the faulty modes of life of the individual and of the community remain uncorrected, so long as these and other factors weakening man's power of resistance and increasing his susceptibility to disease are allowed to operate unchecked, so long will our towns and villages continue to be factories for the supply of cases to our hospitals and dispensaries.

4. The need is urgent for providing as much medical relief and preventive health care as possible to the vast rural population of the country. The debt which India owes to the tiller of the soil is immense and, although he pays the heaviest toll when famine and pestilence sweep through the land, the medical attention he receives is of the most meagre description. The time has therefore come to redress the neglect which has hitherto been the lot of the rural areas.

5. The health services should be placed as close to the people as possible in order to ensure the maximum benefit to the communities to be served. The unit of health administration should therefore be made as small as is compatible with practical considerations.

6. It is essential to secure the active co-operation of the people in the development of the health programme. The idea must be inculcated that, ultimately, the health of the individual is his own responsibility and, in attempting to do so, the most effective means would seem to be to stimulate his health consciousness by providing health education on the widest possible basis as well as opportunities for his active participation in the local health programme.

7. We consider it essential for the success of the scheme that its development should be entrusted to Ministers of Health who enjoy the confidence of the people and are able to secure their co-operation. 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.

In putting forward its proposals for a national health organisation, which incorporates these principles, the Committee has drawn up a long-term programme which, if implemented on the lines suggested,

should help to provide the people with a reasonably well developed service based on the newer and expanding conceptions of modern health practice. The attainment of this objective, which may take about 40 years, is to be achieved through successive stages of intensive effort directed towards the production of the necessary trained personnel and the creation and development of the organisations and institutions which will form essential parts of the community's health service. The Committee has attempted to outline, in some detail, the first and second five-yearly stages of such development and has also suggested certain objectives to be kept in view for the next five years, leaving subsequent developments to be shaped in the light of the circumstances existing at the time.

The doctor of the future should be a "social physician protecting the people and guiding them to a healthier and happier life". He should place prevention of disease in the forefront of his programme and should so combine remedial and preventive measures as to confer the maximum benefit on the community. The Committee's proposals for the training of the 'basic' doctor, the term applied to the medical graduate of the future, are designed to equip him for all such duties.

The active support of the people is sought to be secured through the establishment of Health Committees in every village and through the stimulation of local effort for the improvement of environmental sanitation, control of infectious diseases and other purposes. A wide programme of health education, covering all sections of the population, is also proposed for promoting the growth of such public support.



REPORT OF THE HEALTH SURVEY AND DEVELOPMENT COMMITTEE

VOLUME IV

A SUMMARY OF THE REPORT

INTRODUCTION

1. Our survey of existing health conditions in India in volume I of the report extends to about 220 pages, while the recommendations for the creation of a better standard of national health through the development of an organised health service on modern lines are embodied in a second volume of over 500 pages. In these two volumes we have dealt, at some length, with India's health problems in order to present an adequate picture of the existing state of affairs and of the proposals for its improvement. In addition to such detailed consideration of matters relating to India's present and future health administration we feel that it may be of advantage to give, in a much smaller compass, the salient features of our report in the present volume. In this summary we have not strictly adhered to the chronological order of the chapters in the first two volumes of our report. It deals with different subjects such as personal health services, environmental hygiene, professional education, medical research and so on in separate sections and indicates briefly, in each section, the more important matters relating to the subject concerned in respect of both the existing conditions and of our proposals for their improvement.

THE STATE OF THE PUBLIC HEALTH IN BRITISH INDIA

2. In presenting a picture of health conditions in India we have confined ourselves to the period ending with 1941 in order to exclude the adverse effects of abnormal conditions arising out of the War, particularly after Japan's entry towards the end of that year. The present state of the public health in British India is low as is evidenced by the wide prevalence of disease and the consequent high rates of mortality in the community as a whole and, in particular, among such vulnerable groups as children and women in the reproductive age period. The death rate for the general population in British India was, in 1937, 22.4 per 1,000 inhabitants and for infants (children under one year of age) 162 per 1,000 live births. In 1941 the corresponding rates were 21.8 and 158 respectively. As a contrast the following figures for New Zealand and Australia are quoted:—

	<i>General death rate (1937)</i>	<i>Infantile mortality rate (1937)</i>
New Zealand	9.1	31
Australia	9.4	38

The high rates of mortality in the community at all age periods are reflected in the very low expectation of life in India. We give below the expectations of life for new-born infants in New Zealand, Australia and British India.

	Expectation of life at birth	
	Males	Females
New Zealand	65·04	67·88 (1931)
Australia	63·48	67·14 (1932-34)
British India	26·91	26·56 (1921-30)

New Zealand and Australia are two of the most healthy countries in the world and the figures quoted above give an indication of what has already been achieved in reducing mortality in the community and in prolonging the life of the individual in those countries. India has to go a long way before the health of the people is raised to the standards already reached by the other countries. In all countries in which health administration has made definite progress the expectation of life for females is higher than for males. India is an exception the reason being, as will be shown later, the high rate of mortality among women in this country due to causes associated with pregnancy and childbearing.

3. The rates of mortality among infants and children and among mothers are examined below in greater detail.

Deaths among infants and children under 10 years of age in British India and in England and Wales are shown below as percentages of the total deaths at all ages in the two countries.

Deaths at specific age-periods shown as percentages of the total deaths at all ages

	Under one year	1—5 years	5—10 years	Total under 10 years
British India (average for 1935-39).	24·3	18·7	5·5	48·5
England and Wales (1938) . .	6·8	2·1	1·1	10·0

In India, nearly half the total deaths are among children under 10 years of age and, of the mortality in this age group, one half takes place within the first year of life. The percentage for England and Wales in every age group is very much smaller.

Maternal Mortality

4. About 200,000 women die every year in British India from causes associated with pregnancy and childbearing and, probably, about four millions suffer from varying degrees of disability and discomfort as a result of the same causes.

The Incidence of Diseases

5. At least 100 million persons suffer from malaria every year, and the annual mortality for which the disease is responsible, either direct-

ly or indirectly, is about 2 millions. About 2.5 million active cases of tuberculosis exist in the country and 500,000 deaths take place each year from this cause alone. The common infectious diseases, namely, cholera, smallpox and plague, are also responsible for a large amount of morbidity and mortality, the extent of which varies from year to year. Among the different countries of the world for which statistics are available, India ranks high as one of the largest reservoirs of infection in respect of all the three. These and the other two are all preventable diseases and their incidence should have been brought under effective control long ago. In addition, endemic diseases such as leprosy, filariasis, guinea-worm and hook-worm diseases are responsible for a considerable amount of morbidity in the country, although their contribution to mortality is relatively small.

Causes of the Low Level of Health in India.

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

7. Diet surveys carried out in different parts of the country have shown, in typical urban and rural groups, that the food consumed is insufficient to provide the necessary energy requirements in the case of some 30 per cent. of the families, that the diet is almost invariably ill-balanced and that there is, in terms of food factors, a deficiency of fats, vitamins and proteins of high biological value. The statistics for food production in India show a considerable margin of error, but such figures as are available suggest that, in regard to cereals which form the staple article of diet, the deficiency may be of the order of 22 per cent. of the country's requirements. For other articles such as vegetables, fruits, milk, meat, fish and eggs, the quantities now produced will have to be increased several times before adequate amounts will become available for the proper nutrition of the people.

8. While the extent of provision of hospitals and dispensaries in urban and rural areas varies considerably among the provinces, the rural population has everywhere been less adequately provided for than the urban. The inhabitants of the rural areas live more widely dispersed than those of the urban and the medical aid given by an institution becomes to that extent more restricted. In the United Provinces, for instance, one institution serves in the rural areas an average population of 105,626 distributed over an average number of 224 villages.

9. The quality of service rendered by these institutions leaves much to be desired. For instance, the average time given to a patient was noted, during our tours, to be 48 seconds in one dispensary and about a minute in another. The medical service given to the people under such conditions is bound to be of a perfunctory nature. The medical officers in charge of many dispensaries have, for long periods, been out of touch with modern medical practice without an opportunity to work in a well conducted hospital. Other defects include unsatisfactory conditions in regard to the design of, and accommodation in, institutions, considerable overcrowding in the wards and great insufficiency of the nursing staff.

10. The number of beds available in British India for the treatment of general and special diseases is about 73,000 or about 0.24 bed per thousand population, as against 7.14 in England and Wales and 10.48 in the United States.

Inadequacy of Health Personnel

11. Some idea of the magnitude of the task to be accomplished in increasing, within the next 25 years, trained personnel of various type in order to provide a reasonably satisfactory health service to the people may be obtained from the following figures. We have given existing standards in the United Kingdom but have suggested for India lower ratios as the targets to be aimed at during the next quarter of a century. The reason is that the available numbers in the various categories of personnel are so small that even the attainment of the suggested ratios by 1971 will involve concerted, intensive and unremitting effort, on an unprecedented scale, by the authorities concerned.

Class of personnel	Number available now	Ratio of numbers in column 2 to the present population of British India (300 millions)	Existing ratio in the United Kingdom	Suggested ratio to be attained in 1971 in British India with an estimated population of 370 millions	Number required in 1971
1	2	3	4	5	6
Doctors . . .	47,500	1 to 6,000	1 to 1,000	1 to 2,000	185,000
Nurses . . .	7,000	1 to 43,000	1 to 300	1 to 300	740,000
Health Visitors	750	1 to 400,000	1 to 4,770*	1 to 5,000	74,000
Midwives . . .	5,000	1 to 60,000	1 to 618†	1 per 100 births.	100,000
Qualified Pharmacists.	75	1 to 4,000,000	1 pharmacist to 3 doctors.	1 pharmacist to 3 doctors.	62,000
Qualified Dentists.	1,000	1 to 300,000	1 to 2,700	1 to 4,000	92,500

*Based on 1935 figure.

†Based on 1943 figure.

RECOMMENDATIONS

12. We have indicated above certain dark shadows in the health picture of the country. If it were possible to evaluate, with any degree of exactness, the loss India suffers annually through avoidable waste of human material and the lowering of human efficiency through malnutrition and preventible morbidity, the result would be so startling as to arouse the whole country and create and enlist an awakened public opinion in support of the war against disease. According to one authority the minimum estimate of the loss to India every year from malaria alone lies somewhere between 147 and 187 crores of rupees. A nation's health is perhaps the most potent single factor in determining the character and extent of its development and progress and any expenditure of money and effort on improving the national health is a gilt-edged investment yielding immediate and steady returns in increased productive capacity.

13. In drawing up a health plan certain primary conditions essential for healthful living must in the first place be ensured. Suitable housing, sanitary surroundings and a safe drinking-water supply are pre-requisites of a healthy life. The provision of adequate health protection to all covering both its curative and preventive aspects, irrespective of their ability to pay for it, the improvement of nutritional standards qualitatively and quantitatively, the elimination of unemployment, the provision of a living wage for all workers and improvement in agricultural and industrial production and in means of communication, particularly in the rural areas, are all facets of a single problem and call for urgent attention. 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 favourable to sound individual and community health and must receive serious consideration. Further, no lasting improvement of the public health can be achieved without arousing the living interest and enlisting the practical co-operation of the people themselves.

MODERN TRENDS IN THE ORGANISATION OF A NATIONAL HEALTH SERVICE

14. A study of the tendencies apparent in some of the more progressive countries of the world in the development of organised health services for the community has been of great assistance to us. Broadly speaking, 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 been recognised. The general tendency appears to be towards basing the national health plan on a system of social insurance. Even in Soviet Russia, where medical care is free to all, the cost of the services is partly met from insurance funds, contributions towards these funds being made not by individual workers but by the factories and other institutions in which they work. We have come to the conclusion that, under the conditions existing in the country, 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.

15. Taking into consideration the need for ensuring adequate health service for the vast rural population of the country and the difficulty experienced in the past in attracting medical practitioners to the countryside, we have come to the conclusion that the most satisfactory method of meeting the situation would be to provide a whole-time salaried service, which would enable Governments to ensure that doctors are made available where their services are most needed. This conclusion is supported by the evidence of a number of representatives of medical associations, of private individuals and several medical administrators.

16. We have also come to the conclusion that the whole-time salaried doctors employed by the State should be prohibited private practice. In our scheme the same doctor will combine in himself, at the periphery, curative and preventive health functions and it seems almost certain that, without the prohibition of private practice, his preventive duties will not receive the attention they require. As regards medical relief, 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 neighbour. We have therefore recommended the prohibition of private practice to the full-time salaried doctors employed by the State and have, at the same time, suggested scales of pay which, we believe, will provide reasonably adequate remuneration for the services they render.

17. The utilisation of the services of suitable medical men outside the health service on a part-time or even on an honorary basis will also be advantageous and even necessary, particularly in the earlier stages of our health programme. In the cities and some of the larger towns in the country, general practitioners with high qualifications and specialists are available for such employment.

The Health Programme

18. We have drawn up our health plan in two parts, one a comprehensive programme for the somewhat distant future and the other a short-term scheme covering two five-year periods. We have taken the countryside as the focal point of our main recommendations, for the debt which India owes to the tiller of the soil is immense. When pestilence and famine sweep through the land, it is he who pays the heaviest toll and yet receives only the scantiest medical assistance. Further, nearly 90 per cent. of the people in India live in the rural areas and the basic problem before the country is the provision of adequate health protection to this preponderatingly large section of the community. We have therefore made the villager the chief beneficiary under our proposals.

19. We shall first refer briefly to our proposals under the long-term programme and then set out those which are recommended for each of the two five-year periods, which constitute the short-term programme. In doing so we shall take up first the district health organisation in respect of each programme. The machinery for the organisation and administration of the health services at

the Centre and in the Provinces constitutes an integral part of both the long and short-term proposals and it will be described later.

THE LONG-TERM PROGRAMME

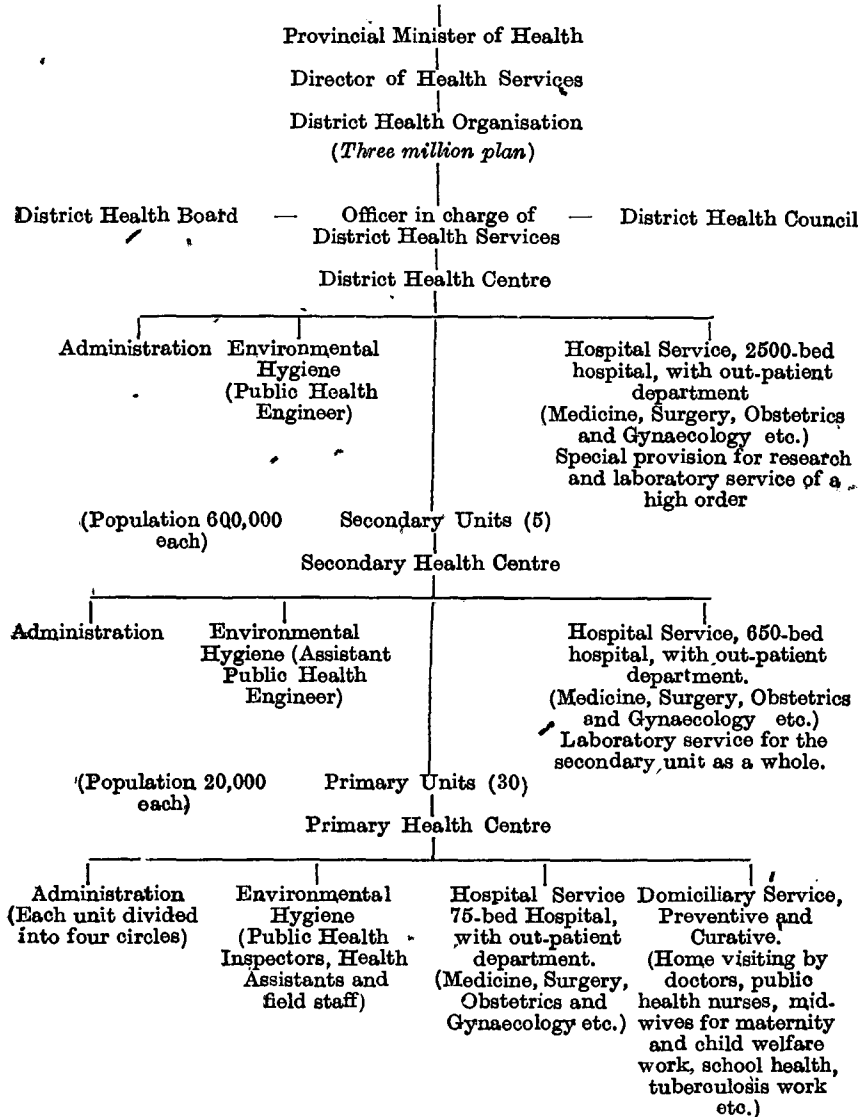
20. The large variations that exist in the density of population in different parts of the country make it impossible to formulate a plan which can be applied without modification over all the provinces. The desirability of associating the activities of the proposed health organisation with those of other Departments of Government such as Agriculture, Education, Animal Husbandry and Co-operation has been recognised and it is therefore considered advantageous that, as far as possible, the administrative district should be chosen as the area for the development of the scheme. The populations of individual districts vary considerably from over five millions to a few hundreds of thousands or even less in some cases and therefore, in presenting the plan, an arbitrary figure of three millions for a district has been chosen. For the sake of convenience it will be referred to as the three million plan. In implementing the proposals the details that are given will have to be modified in the provinces so as to suit the size and population of their individual districts.

The Three Million Plan

21. The district health organisation will have as its smallest unit of administration the primary unit, which will normally serve an area with a population of about 10,000 to 20,000. A number of such primary units (about 15 to 25) will together constitute a secondary unit and a varying number of the latter (about 3 to 5) will form the district health unit, the designation by which the district health organisation will be known. At each of the Headquarters of the district, secondary and primary units will be established a Health Centre as a focal point from which the different types of health activity will radiate into the territory covered by each type of unit. The District Health Centre will possess general and special hospitals with a total bed strength of about 2,500 and all the consultant and laboratory services required for the diagnosis and treatment of disease on up-to-date lines. The administrative staff of the district health organisation will be located here and will exercise supervision over the district as a whole. Similarly, the Secondary Health Centre will be provided with hospital accommodation of about 650 beds and with equipment and other facilities on a generous scale, although not up to the standard of the District Health Centre. The administrative staff of the secondary unit will be attached to the Secondary Health Centre and will exercise supervision and control over the primary units included in it. The Primary Health Centre will have a 75-bed hospital and health administration over the area included in the primary unit will radiate from this Centre.

22. The district health organisation described above and its functions are shown below in diagrammatic form :—

LONG-TERM PROGRAMME



The medical officers in charge of the Departments of Medicine, Surgery etc. in the hospital at the Secondary Health Centre will, in addition to their hospital duties, supervise work in their respective fields in the hospitals in the primary units and the corresponding staff in the hospital at the district headquarters will similarly supervise the work of the different departments in the secondary and primary health centre hospitals. Close and continuous guidance through advice and supervision, which should extend even to the remote villages, is fundamental to the success of the scheme and the administrative staff at the District and Secondary Health Centres will carry out this task in the different fields of health administration.

The Primary Unit

23. Each primary unit will have six medical officers, six public health nurses and a 75-bed hospital with the requisite nursing staff, and all these should be utilised for organising a combined curative and preventive health service in the area. Over and above the hospital nursing staff there are provided six public health nurses, who should be qualified nurses with training in midwifery and, in addition, in rural health work in its preventive and remedial aspects. 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 mothers and children, tuberculosis work and other activities in the houses within her area of jurisdiction. The remaining two public health nurses and two medical officers will be available for organising and carrying out curative treatment in the homes of the people.

The Secondary Unit

24. The staff employed in a secondary unit will be considerably larger than that of a primary unit. The Administrative Officer at the headquarters of the secondary unit will be responsible for the supervision and co-ordination of all curative and preventive health work in the whole area supervised by the secondary unit. There will be whole-time heads of the different departments of medicine, surgery, maternity, tuberculosis and pathology at the secondary unit hospital and they will perform the dual function of attending to the duties of their respective sections in the hospital and of inspecting periodically similar work carried on in the primary unit hospitals.

25. 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 primary units. There is also an Assistant Public Health Engineer for supervising all activities in connection with environmental hygiene throughout the area controlled by the secondary unit.

The District Headquarters Organisation

26. The provision for medical relief at the district headquarters is on a much larger scale than at a secondary unit. The number of beds in the hospital is 2,500 and the numbers of medical officers and other personnel employed are considerably greater than in a secondary unit. The provision of 2,500 beds need not necessarily be made in one large institution. These beds include provision for medical, surgical, obstetrical and gynaecological cases as well as for patients suffering from infectious diseases, mental diseases, tuberculosis and others. A number of institutions can be grouped together conveniently in the same area in order to provide the required facilities.

27. The secondary unit and district headquarters hospitals, with their better equipment and superior type of medical personnel, will be the institutions to which the more complicated cases admitted in the primary unit hospitals will be removed. The provision of ambulances and telephone connection between all the three types of hospitals are essential for ensuring that these institutions are utilised to the largest possible extent.

28. At all the three types of hospitals (primary unit, secondary unit and district headquarters hospitals) social workers are to be

SUMMARY

employed. Their functions include, among other things, the visiting of the home of the patient in order to ascertain the causes underlying the disability for which he or she 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. Under our programme the treatment of disease has been approached not merely from the standpoint of affording the patient immediate relief but also from that of attempting to remove the causes which are responsible for his condition.

29. The health organisation briefly described above 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. Work in connection with maternity and child welfare, tuberculosis, leprosy, etc., will be carried into the homes of the people from the hospitals, the outdoor organisations in respect of each of them being closely related to these institutions. 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 provide that 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.

30. By the time the long-term programme is completed the hospital accommodation available in the country will have risen from the present figure of about 0.24 bed per 1,000 of the population to 5.67 beds per 1,000. As regards health personnel, the numbers that will be required under certain categories and those now available are shown below:—

	Numbers required for the complete programme	Numbers now available
Doctors	233,630	47,500
Nurses (including public health nurses) .	670,000	7,500 (including existing health visitors).
Midwives	112,500	5,000
Pharmacists	77,880	75

Is such a large increase in the numbers of the health personnel possible? An example of an unparalleled expansion of health personnel 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 seven times within a period of 28 years. In India the increase required under these proposals is only about five times the existing number of doctors, to be achieved in a longer period.

THE SHORT-TERM PROGRAMME

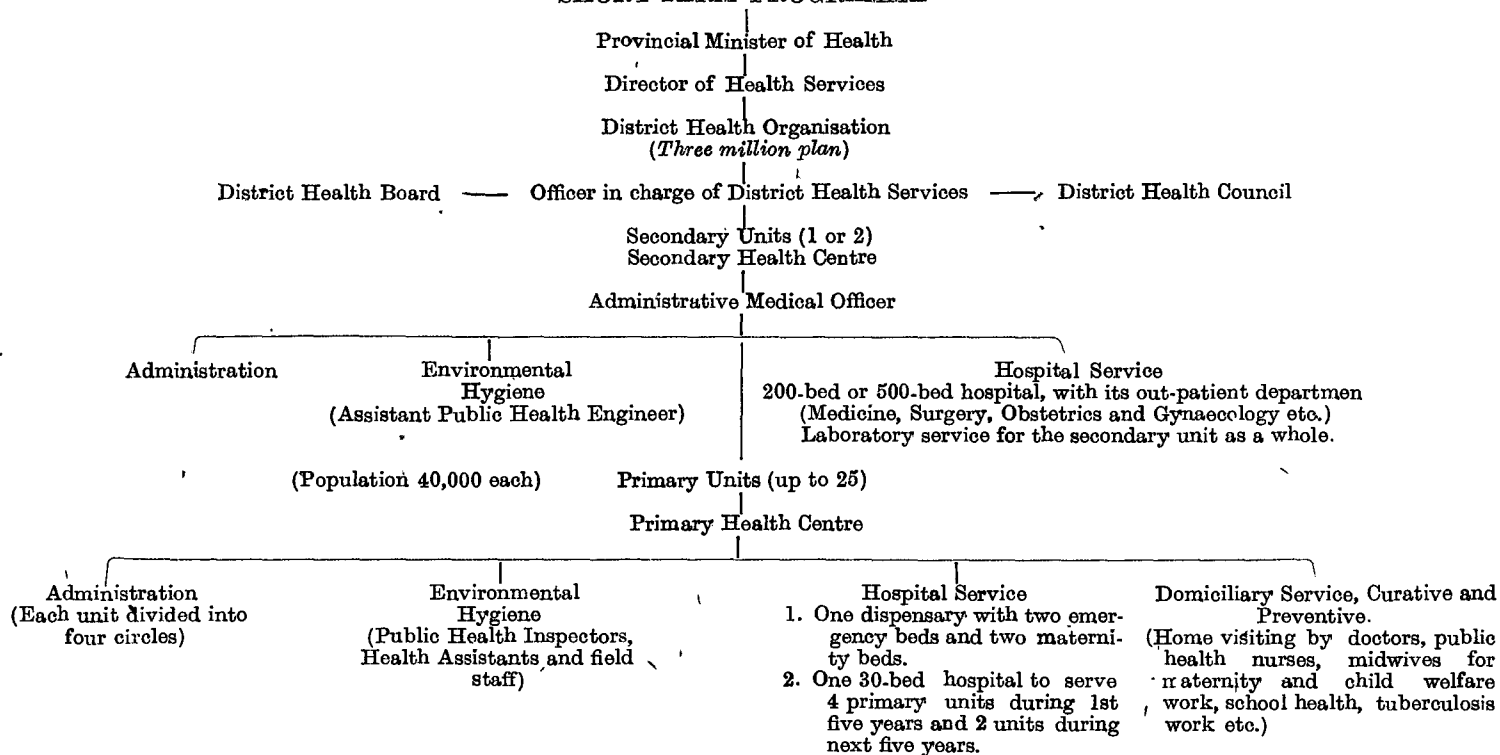
31. Our short-term proposals, which are intended to supplement and not supplant the existing health services, do no more than present a general picture for the guidance of the Provinces. They constitute, in our view, the irreducible minimum if tangible results are to be produced. The plan includes proposals for the establishment of personal and impersonal health services. Under the former head we propose a province-wide organisation for combined preventive and curative health work. This will provide, for each district, (1) a number of primary and secondary units, which are included in the district health unit and (2) special health services for mothers and children, school children and industrial workers as well as for dealing with the more important diseases prevalent in India, such as malaria, tuberculosis, venereal diseases, leprosy, mental diseases, and some others. The three important subjects of nutrition, physical education and health education have been dealt with in separate chapters in volume II of our report. Our recommendations regarding impersonal health services relate to town and village planning, housing, water supply, drainage and other matters regarding general sanitation. Specific proposals for the training of doctors, nurses and other categories of health personnel, for medical research and certain other important matters have also been made.

The Province-wide Health Organisation

32. While the outlines of the general plan of the district health organisation will follow those indicated for the long-term programme the plan will be less elaborate. We suggest that, in view of the insufficiency of funds and of trained personnel, each primary unit should cover, during the first ten years, a population of 40,000, that the primary health centre should have a dispensary with two beds for maternity and two for emergency cases instead of a hospital and that the secondary health centre should start with a 200-bed hospital to be raised, by the tenth year, to 500 beds. We also suggest that the establishment of the district health centre may be postponed till after this period. The staffing and equipment of the health centres at the headquarters of the primary and secondary units will be on a reduced scale. In order to expand the existing meagre hospital facilities in rural areas we also suggest that a 30-bed hospital should be established, at the start to serve four primary units, and that, by the end of the first ten years, their number should be doubled so that one such hospital will serve two primary units.

33. The district health organisation suggested for the short-term programme and its functions are given below in diagrammatic form :—

SHORT-TERM PROGRAMME



In the short-term programme the establishment of the organisation at the district headquarters is not contemplated. The administrative and supervisory functions exercised by the staff at the Secondary Health Centre will be on the lines indicated for the long-term programme.

34. The district health organisation should, from the start, be established in every district in a province. This organisation should begin with five primary units and one secondary unit and these should be gradually increased to 25 primary and two secondary units at the end of the first ten years. The following tabular statement indicates the expansion we suggest for the health organisation in a typical district:—

Expansion of the scheme in a typical district

	First year	Fifth year	Tenth year
Number of primary units .	5	10	25
Number of dispensaries . .	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

Starting with about a seventh of the average population of a district in British India the proposed health organisation will, it is expected, serve half the population of individual districts by the end of the first ten years.

The Primary Unit

35. The primary health centre at the headquarters of the primary unit will be the focal point from which will radiate the various health activities contemplated in our programme. For each unit the staff required during the short-term programme will consist of 2 medical officers, 4 public health nurses for outdoor duty, 1 nurse attached to the dispensary, 4 midwives, 4 trained *dais* (as an *interim* measure till a sufficient number of midwives becomes available), 2 sanitary inspectors, 2 health assistants, 2 clerks, 1 mistry, 15 inferior servants and 1 pharmacist. This staff, with the exception of the public health nurses, midwives and trained *dais*, should be stationed at the headquarters of the primary unit, although their duties will extend over the whole area covered by the unit. The public health nurses, midwives and trained *dais* will be located at different places so as to make their services promptly available, wherever required.

36. We consider that the health programme in India should be developed on a foundation of preventive health work and proceed in the closest association with the administration of medical relief. A reduction in the demand for curative treatment can be secured only through successful preventive work. Both the doctors in the

primary unit should therefore perform curative and preventive health duties.

37. We have placed maternity and child welfare work in the forefront of our programme. Attention has already been drawn to the large number of preventible deaths, which occurs annually among children under 10 years of age and among women in the reproductive age period as the result of causes associated with pregnancy and childbearing. The supreme importance of dealing immediately with this section of the population is therefore obvious. Further, a progressive improvement of the public health depends largely on promoting the hygienic mode of life among the people by educating them towards this end. This education should be carried out intensely among women and children 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 their numerous contacts with women and children.

38. In the beginning the country will be faced with the necessity of providing, in many directions, services manned by imperfectly trained personnel with the ability to perform only limited functions. For instance, in order to promote school health work, selected school masters with limited training in the carrying out of certain duties will have to be utilised in the place of doctors and nurses until the latter become available in sufficient numbers. These teachers will work under the close supervision of the two doctors in charge of the primary unit in order to ensure that they carry out their duties satisfactorily.

39. No permanent improvement of the public health can be achieved unless the active participation of the people in the local health programme can be secured. We have therefore suggested the establishment, in each village, of a Health Committee consisting of five to seven individuals, depending on the size and population of the village. The members of the committee, who will of course be voluntary workers, can, after suitable training, help to promote specific lines of health activity. Their local knowledge and intimate contact with the people should enable the members of the committee to influence the former to accept and actively advance the health measures which are designed to promote the public welfare. The committee members should also be able to promote local effort, without payment, towards the carrying out of many measures which would otherwise prove prohibitive in cost. We consider that the development of 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 health officials will be able to place at the disposal of the people.

The Secondary Unit

40. From the very start, a secondary unit should be established in each district. The secondary health centre, which will be established at its headquarters, will help to provide a higher type of medical service than that available in primary units as well as supervision and guidance of the health activities in these units. When fully developed, a secondary unit may be expected to cover an area with an average population of about 600,000. In order to co-ordinate health administration with the activities of other departments of

Government, it will be of advantage if the area of a secondary unit can be made to correspond to that of a sub-division in the district.

Hospital Provision

41. The anticipated numbers of new institutions in the 11 Governors' Provinces at the end of the first six years and of the first ten years respectively are shown below:—

	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	<i>Nil</i>
End of the ten year period.	3,905	1,990	216	139

42. In addition there will be separate hospital provision for tuberculosis, mental diseases and leprosy. The existing number of hospital beds in British India is about 73,000 and, with the proposed new provision, the total accommodation expected at the end of the first five and first ten year periods will be as follows:—

At the end of the first five years—Approximately 183,000.

At the end of the first ten years—Approximately 353,000.

This programme of hospital expansion will raise the existing ratio of bed to population in the manner shown below:—

Beds per 1,000 population

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

As has already been pointed out, existing provision for hospital accommodation in England and Wales is 7.14 per 1,000 of the population and in the United States 10.48 per 1,000.

Dental Service

43. 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 organise dental service on a modest scale during the next five years. Our proposals include the establishment of dental sections in the 500 and 200 bed hospitals at the secondary health centres as well as the provision of travelling dental units for service in the rural areas. If the programme is completed on the lines envisaged by us there will be, at the end of the first ten years, 139 hospitals with 500-bed accommodation and 216 hospitals with 200 beds in each. The number of mobile dental units will be 710.

44. Reference should also be made to certain other matters which we consider to be of great importance from the point of view of ensuring the success of the health programme we have recommended. They are briefly dealt with below.

Housing Accommodation for the Health Staff

We consider the provision of housing accommodation for the health staff 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 the rural areas of the amenities generally available in towns, including housing and water supply, is one 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 the provision of housing is fundamental to the success of our scheme.

Co-operation of the Health Services with other Departments of Government

The national programme of reconstruction should be developed on a broad front and, simultaneously with the inauguration of the health scheme, the reconstruction plans of other Departments of Government should be brought into operation in the same area.

Village Communications

We must emphasise the vital importance of developing village communications in order to enable the health organisation to offer efficient service to the people. Without such development our whole plan for the rural areas may either be paralysed or lose the greater portion of its effectiveness. Further, the economic welfare of the village population largely depends on the development of rural communications and we stress the need for giving high priority to such development.

Ambulance

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 in our scheme.

Travelling Dispensaries

In the sparsely populated parts of individual provinces it will be advantageous to provide travelling dispensaries to supplement the health services rendered by the primary health centres.

Utilisation of the Buildings, Equipment and Personnel made available from the Army after the War

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, be utilised in the development of our health programme. Anti-malaria units, hygiene squads, hospitals constructed for war purposes, military camps, large airfields with such amenities as roads, water-supply and lighting,

motor vehicles of various types, should all be made available, on easy terms, for the purpose of developing the health programme.

Delhi Province as a Demonstration Area

Some of us are of the opinion that Delhi Province is particularly suitable for being made a demonstration area by implementing here our proposals as well as those of other Committees which have put forward schemes for post-war reconstruction.

Objectives for the Third Five-year Term

45. While the proposals outlined above relate to the first ten years of the health programme, certain broad suggestions are put forward as the objectives to be kept in view for the 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 centres for nurses.

(5) The training of 500 hospital social workers.*

ORGANISATION AND ADMINISTRATION

46. On the administrative side we propose:—

(1) a Ministry of Health at the Centre;

(2) Ministries of Health in the Provinces and

(3) local area health administrations.

We consider it fundamental that the portfolio of health at the Centre and in the Provinces should be in charge of a separate Minister, so as to ensure his undivided attention being given to the development of the future health programme. The need for developing the health services in the closest possible co-operation of the people has

* Drs. Vishwa Nath and Butt foresee that diarchical conflicts will arise out of the application of these proposals for medical relief in the districts. In their view the existing machinery of medical relief, however inadequate and unsatisfactory, is not ill-suited to furnish the foundations for evenly spread improvements. They advocate as even a distribution of facilities accruing from increased personnel, accommodation and equipment, as the requirements of special institutions, geography and density of population may permit. On the other hand the others consider that, if the suggestion of these two colleagues is accepted, the result may be a congeries of unplanned accretions to the existing organisations for medical relief and preventive health work and that one of the fundamental purposes underlying the health plan put forward in the report will not be fulfilled. The scheme is intended to promote, from the beginning, the development of remedial and preventive health work on a unified basis as well as to provide an integrated institutional and domiciliary service to the people. The existing curative and preventive health services are, on the other hand, functioning independently of each other with unsatisfactory results. In all progressive countries the requirements indicated above are considered as essential features of a modern health organisation. For these reasons the majority consider that the suggestion of Drs. Vishwa Nath and Butt would destroy the essential requirements of the Committee's plan.

already been stressed. Both in respect of legislation and of administration it is likely that some of the measures to be undertaken will offend existing social and religious practices. A Minister, who enjoys the confidence of the people and can secure their co-operation, can alone carry such enactments through the legislature and enforce their working in the country.

47. After giving 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 the latter enjoy under the Government of India Act of 1935, we have come to the conclusion that certain principles should be taken into consideration in formulating plans for future development. These principles are:—

(a) That the wide measure of autonomy that has been granted to the Provinces should be respected to the utmost possible extent. Our proposals for the future will make for 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 minimise friction and to promote mutual consultation 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 the Central and Provincial Ministers of Health. The Centre, with its larger resources in money and technical personnel, should help the Provinces with grants-in-aid for the development of their health programmes and with such technical assistance as may be required. One of the important functions of the Board will be that of making 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 Ministers of Health on the one hand and between their administrative and technical staff on the other, should create a firmer foundation for the harmonious development of the health programme over the country as a whole than a reversal of the policy of decentralisation and a resumption of powers by the Centre to regulate and control development in the Provinces. We recognise that there will be certain exceptional circumstances in which the Central Government should have power to interfere in Provincial administration. It is, however, to be expected that the machinery for consultation and co-operation, which has been suggested above, should help to reduce these occasions to the minimum. We believe that a Centre acting with sympathy and imagination may well be able to hasten the pace of progress in the provinces by promoting a spirit of healthy competition among them in their task of providing progressively higher standards of health administration in their respective areas.

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

(c) 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 the available facilities, curative and preventive, in the interests of efficiency and of economy.

(d) 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 recognise the need for such technical guidance and have therefore incorporated in our proposals 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, dental, nursing and other professions.

Functions of the Central and Provincial Governments

48. The main functions which we have recommended for the Central and Provincial Governments are broadly those for which they are responsible at present under the Government of India Act, 1935. In addition we have suggested that the Centre should take a definite lead in planning and promoting the development of health services, preventive and curative, in the country as a whole. Provincial activities in the field of health should be assisted and co-ordinated by the Centre through a system of grants-in-aid of approved schemes in the provinces and of technical assistance, where desired. Control of inter-provincial spread of communicable diseases, the sanitary control of inter-provincial traffic and the enforcement of standards regarding food and drugs in inter-provincial commerce should also be important functions of the Central Government.

In certain exceptional circumstances, the Centre should have power to take direct action in a province in the interests of the country as a whole. Such intervention should, as far as possible, be after consultation with the proposed Central Board of Health and, in cases requiring urgent action before such consultation could take place, the matter should be brought to the notice of the Board with the least possible delay.

49. We have recommended the establishment, in the provinces, of Provincial Health Boards and of Provincial Health Councils with composition and functions similar to those of the Central Board and Central Council.

Central and Provincial Health Services

50. The principal technical adviser to the Minister of Health will be the Director General of Health Services at the Centre and the Director of Health Services in a Province, who will function in each case as the single administrative officer for the curative and preventive departments of health. 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.

Recruitment and Control of the Central and Provincial Health Services

51. The following principles should, we recommend, guide the authorities concerned with the recruitment and control of the future Central and Provincial Health 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, the venue of recruitment for

both being India. Recruitment to these services will be restricted to persons living in India except in the case of a small number of posts in connection with teaching and research institutions, for which it may be necessary to obtain suitable persons from outside the country. Such persons should be recruited from abroad on short-term contracts, every effort being made within the period of the contract to train a suitable Indian for the post.

(2) Appointments to posts in the teaching and research institutions should be made purely on merit. One-third of the general health service posts should also be filled on merit. In filling up the remaining posts consideration may be given to the need for communal representation, every community being given its share of the 66½ per cent in accordance with the proportions laid down by the Governments concerned. Of the candidates from individual communities the best available should be chosen. After admission into the health services promotion to higher posts should be regulated solely by merit.

(3) To secure opportunities for wider experience there should be exchanges of officers between the Centre and the Provinces to be arranged by mutual agreement.

(4) A proportion of the posts in the Provincial Cadres should have the same salary and status as in the Central service, so that the exchange suggested above may be facilitated.

(5) The Central and Provincial Services should be maintained as purely civil organisations.

(6) All members of these services should have opportunities of gaining experience of both urban and rural health work.

(7) There should be no reservation of posts under the Central or Provincial Governments for the civil branch of the Indian Medical Service.*

Health Administration in Local Areas.

52. We envisage a comprehensive health service, the success of which will mainly depend upon the fulfilment of the following conditions: (a) recruitment of the staff and the conditions of service should be on similar lines throughout the province so as to permit of 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 even in remote villages.

53. *District Health Board.*—These conditions can be fulfilled only by a health service maintained by a single authority and not through a number of separate services controlled by different local bodies. At the same time it is essential to associate the public with the formulation of health policy and with its implementation. We therefore recommend 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. This authority may be designated the District Health Board and its jurisdiction will, in due course, extend over the district as a whole.

* In the place of a Central Ministry of Health Drs. Vishwa Nath and Butt propose a Central Board of Health with a Technical Secretariat discharging specific functions. Their views on the recruitment of the health services are also different from those set forth above. Their views and our observations on them are given in paras. 27—31 of Chapter XVII of Volume II of the report.

54. We consider, however, that the deprivation of the health functions exercised by local bodies should be limited only to such as are in our opinion unlikely to be able to maintain the standard of service we have recommended. We therefore suggest that certain large municipalities such as Calcutta, Bombay, Madras and Karachi, which are governed by their own Acts, as well as other municipalities having a population of at least 200,000, which may be considered by the Provincial Government as being in a position to maintain an independent health service of the required technical efficiency, may be excluded from the jurisdiction of the District Health Board. All these large municipalities should develop and maintain health organisations on the lines suggested by us.

55. In the early stages of the programme only limited areas in each district will be brought within the operation of our scheme. In these areas there will be, as shown above, a unified health authority with a provincialised health service covering all categories of personnel. For the areas outside our scheme we recommend that, in order to secure an improvement of the health administration of existing local bodies, certain legal and administrative measures which have been taken in the province of Madras should be applied in other provinces also.

56. We have suggested that representation of the people on the Board should be partly secured by direct election by the people and partly by election, from their own ranks, by the local bodies in the areas covered by our scheme. We have also suggested, that, following the lines laid down in the Madras Public Health Act, 1939, every municipality included in the area under our scheme should be required statutorily to contribute to the District Health Board not less than 30 per cent. of its income from all sources other than Government grants and that every District Board or *panchayat* should similarly contribute not less than 12½ per cent. of its income from such sources. 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 any grants sanctioned by the Provincial Government will constitute the funds to be administered by the Board.

57. While the Board will enjoy a large measure of autonomy in order to ensure that local opinion in the district is permitted to influence health policy, it is essential that the Provincial Minister of Health should have the power of ensuring compliance by the Board with the general policy laid down by him. We have also recommended 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.

Recruitment and Control of the District Health Service

58. After giving careful consideration to the question as to whether the recruitment and control of the district health service should rest with the Provincial Government or with the District Health Board concerned, we have come to the conclusion that the balance of advantage is heavily in favour of the provincialisation of this service.

In our view, such provincialisation should extend over all the posts in the district health organisation because, if 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.

59. The district health organisation will be in charge of an officer to be designated the Officer in charge of the District Health Service. 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. This officer will be removed by the Provincial Government if a recommendation to that effect is passed by the Board by a two-thirds majority, taking into consideration its full strength.

District Health Council

60. We have already recommended the creation of a District Health Council consisting of representatives of different professions (e.g., those of doctors, dentists, pharmacists, nurses 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 Service should be the Chairman of this Council.*

Salaries.

61. We have given considerable thought to the question of the scales of pay to be proposed for the health staff. Obviously the country cannot afford rates of remuneration which are out of all relation to its national income and are higher than those which economic conditions demand. Further, too generous a provision on salaries may well wreck or at least greatly handicap the implementation of any large scale health programme. The question of salaries, moreover, is not one which concerns medical and public health personnel alone. The necessity for establishing some measure of parity between the various Provinces in the matter of the salaries of their public health staff has been strongly impressed on us by a Provincial Minister of Public Health. Another important consideration, in determining the scales of pay, is that of the competitive attraction provided by non-State employers. In the circumstances we feel that the subject is of such complexity and importance as to require comprehensive examination at the hands of an *ad hoc* all-India Committee which should include medical men. The results of such examination will be of the utmost value to the Central and Provincial Governments. We have, therefore, recommended the establishment of such a Committee. For the purpose of estimating the cost of our proposals we have either adopted existing rates or assumed scales of pay which appear to us *prima facie* to be generally not unreasonable.

THE NUTRITION OF THE PEOPLE

62. The national health campaign is concerned not only with the prevention of disease but also with the development of a healthy

* Mr. P. N. Saprú holds views which are different from those of the other members regarding the constitutional aspects of certain of the proposals outlined above as well as the suggestion for a modification of the existing form of local health administration. His views are embodied in two minutes of dissent which are appended to Chapter XVII of Volume II of the report. Our reply to his remarks regarding local self-government will be found in paras. 58-61 of the same chapter.

and vigorous population and improved nutrition plays a vital part in preventing sickness and in promoting positive health.

63. Under-nutrition and malnutrition exist widely in the country. According to the Director, Nutrition Research Laboratories, Coonoor, an insufficient and ill-balanced diet giving only about 1750 calories per day (as against the needed 2400 to 3000 calories) is typical of diets consumed by millions in India. Apart from inadequate nutrition being responsible for a lowering of the general standard of health of the individual, continued insufficiency of certain food factors in the diet will produce specific forms of disease. Such diseases are prevalent, to a varying extent, in different parts of the country. For instance, *beri beri* is not uncommon among adults and infants in the Northern Circars of the province of Madras, osteomalacia and rickets are prevalent in certain parts of Northern India, keratomalacia is a common cause of blindness in South India and goitre is not infrequent among the communities living in some parts of the Himalayan and sub-Himalayan regions.

64. The main defects of the average Indian diet are an insufficiency of proteins, mineral salts and vitamins. A general raising of dietary standards throughout the country is basically an economic problem, the solution of which depends on the scientific development of agriculture, animal husbandry and fisheries and the simultaneous development of industrial-resources. We consider that food planning should have, as its ultimate objective, "the provision of an optimum diet for all, irrespective of income, and plans should be laid to reach the objective by forced marches, stage by stage, within a specified period of time."

65. As the average Indian diet is inadequate in respect of the quality and quantity of the protein consumed, one of the most urgent needs is the raising of protein consumption to the required level. Proteins of high biological value are of animal origin. A certain proportion of the protein consumed each day should be proteins of this type. We shall deal with three articles of food in this connection, namely, milk, fish and food yeast. Urea as a cattle feed deserves consideration in connection with increasing the availability of meat and its production will also be referred to briefly.

Milk.—The Director of Nutrition Research Laboratories, Coonoor, has suggested the inclusion of 8 ozs. of milk per day in the average Indian diet in order to improve its quality. Expectant and nursing mothers and children up to 14 years of age will need much more. We have suggested that, taking into consideration the existing demand for milk products, the target for realisation in the near future should be an increase in milk production to the extent of at least 110 per cent.

It has been brought to our notice that, very recently, the production of synthetic milk which, it has been claimed, has 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 emphasise 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.

Fish.—India's long coast-line, her numerous rivers, lakes and tanks afford great opportunities for developing the fish industry.

The total production of fish in India, both fresh water and marine is estimated at less than two crores of maunds per annum as against $9\frac{1}{2}$ crores of maunds, the estimated requirement of Bengal alone where 90 per cent. of the people eat fish. These figures should help to give some idea of the extent to which the fish industry will have to be developed in India.

Food yeast.—Yeast is of value as a supplement to poor Indian diets because of its richness in proteins and vitamins of the 'B' group. Certain strains of yeast, which can be grown on molasses, produce palatable products of high nutritive value. We strongly recommend the immediate investigation of the possibility of producing food yeast on a large scale in India.

Urea.—It has been brought to our notice that, while the production of animal proteins, such as meat and milk, through a process of feeding natural foods to certain animals is a costly and uneconomical process, a simple chemical, urea, 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 production of urea may be linked with the process of manufacturing synthetic nitrogenous fertilisers and it is thus possible to promote the manufacture of both cattle food and plant food at the same time. We strongly urge that this suggestion should be carefully investigated without delay.

66. Our further suggestions for improving the nutrition of the people include the production, in India, of the different vitamins in sufficient quantities to meet the requirements of the country as well as the provision of facilities for the storage, transport and distribution of food, particularly of perishable articles such as milk, fish and fruit.

67. *Prevention of food adulteration.*—The subject of food adulteration was recently investigated in detail by a Committee of the Central Advisory Board of Health. We support all its recommendations and, in particular, desire to draw the attention of the Governments in the country to three of these, namely, the establishment, on a permanent basis, of a standing Central Committee for Food Standards, which we understand has now been created by the Government of India on a temporary basis, the formation of provincial cadres of public analysts and the establishment of food laboratories in association with central and regional bacteriological laboratories in the Provinces.

68. Lastly, in order to secure an improvement in the quality of the food made available to the public, we recommend that the principles of the Agricultural Produce Grading and Marking Act, which now applies only to agricultural products, should be made applicable to articles of food other than agricultural and that early action should be taken to give effect to this suggestion.

HEALTH EDUCATION -

69. According to modern conceptions, health education includes "not only instruction in purely health matters, but also those activities which are likely to influence favourably 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".

70. Health education is gradually taking its proper place in the life of the people in India, but progress has so far been slow. 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. "The low standards of personal and environmental hygiene met with in many schools..... 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."

71. As regards the general population, health education is mainly-carried out by the provincial public health departments. In most provinces a special health propaganda organisation exists in the office of the Director of Public Health. 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 Co-operative Department have been actively co-operating in the health education of the people. In no province, however, has health education come up to the standard reached in the more advanced countries.

Our Recommendations

72. We support the recommendation of the Central Advisory Boards of Health and of Education that the instruction of school children in hygiene should begin at the earliest possible stage. Such instruction in the early stages should be entirely practical and devoted to the formation of health habits and the promotion of personal hygiene. It is particularly important that the student should see, in actual operation, the sort of hygienic and sanitary arrangements he is taught and encouraged to demand for himself. School clubs, societies such as the Indian Red Cross Society and the St. John Ambulance Association and organisations like the Boy Scout, Girl Guide, Hindustan Scout and Bratachari movements can actively help in the development of the health education programme for school children.

Health Education of the General Population

73. The main responsibility for assisting and guiding the health education of the general population should rest on the health departments of Governments and the establishment is recommended of properly constituted Health Publicity Bureaux as part of the Central and Provincial Health Departments. One of the functions of the Central Health Publicity Bureau should be 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 organising health propaganda in their own territories. Another important duty of this Bureau should be the publication of an Indian Health Journal.

74. The organisation of health propaganda is a highly specialised task and it should therefore be entrusted to persons capable of producing results. The methods of propaganda which commercial organisations, 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.

75. The establishment of permanent health museums in the larger towns and cities is also recommended.

PHYSICAL EDUCATION

76. Till the beginning of the twentieth century no one looked upon physical education as an integral and important part of general education. During the last 20 years revolutionary changes have taken place in all civilised countries in the concept and content of physical education and training.

77. Something has been done in India to give physical education and training their proper place in the educational structure, but a great deal remains to be accomplished. There is a great dearth of suitable teachers qualified to impart instruction in this important subject. We require many suitably equipped and staffed physical education schools and colleges in the country. At present there are only five physical education colleges in India. At a rough estimate the total number of physical training teachers trained at these institutions during the last 20 years, does not exceed 3,000—far too small a number for the needs of the country.

Our Proposals

78. (a) *The training of physical education instructors.*—For the proposed post-war schemes of education thousands of qualified physical training teachers will be required. We therefore recommend that there should be one or two physical training colleges in each province. Each institution should grant a recognised qualification. In addition, physical education should be made a compulsory subject in normal schools. A certain number of qualified physical training instructors should be sent abroad at State expense for higher training. On return they should be employed in responsible administrative and teaching posts, where their special training would be of value.

79. (b) *A physical training programme for the community.*—In the beginning it may be advantageous to develop a single organisation to serve the needs of school and college students as well as of the general public. The school master, because of his general education and of the influence he is able to exert on successive groups of pupils, is in a position to evoke a favourable response from the public in the matter of physical education and culture. He should therefore be utilised for developing a physical education programme for the adult population. It will be necessary to establish a suitable organisation in each province and this may, with advantage, be made part of the Provincial Education Department. It is essential that this organisation should establish close liaison with the Health Department.

The national physical education programme should include indigenous games, sports and folk dances. A blending of the old and the new in an attempt to evolve a sound scheme of physical culture is advisable. In this programme separate provision should be made for students, the male adult population and for girls and women.

HEALTH SERVICES FOR MOTHERS AND CHILDREN

80. We have drawn attention to the high rates of morbidity and mortality prevailing among mothers and children in this country.

Measures directed towards a reduction of sickness and mortality among these sections of the community must have the highest priority in our programme of health development.

The Primary Unit.—The staff available for health service for mothers and children in a primary unit will consist of a woman doctor, four public health nurses, four midwives and four trained *dais*. The provision for 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 beds will be set apart for maternity and gynaecological cases and there will be four cots for children.

81. 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 these facilities it should be possible to organise a maternity and child welfare centre on a reasonably efficient basis. Its range of activity can be expanded as and when more trained personnel and funds become available and communications improve. The functions of the centre will include the following:—

(a) to get in touch with as many pregnant women in the area as possible and to persuade them to visit the clinic regularly, so that periodical examinations may be carried out and a record of their medical history kept;

(b) to provide for the skilled assistance of a midwife or trained *dai* at the time of delivery and for domiciliary visits by her for two weeks thereafter;

(c) to keep the mother and infant under observation, if possible, for a year;

(d) to teach mothercraft in all its branches and to inculcate sound hygienic habits in the mother and child;

(e) to keep children under observation, if possible, till five years of age;

(f) to organise periodical talks, by suitable persons, for husbands and fathers in order to secure their co-operation in the development of a healthy and happy home and

(g) to aim, in general, at becoming the focus of social activity in the area as far as mothers and children are concerned.

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 and with bathing facilities.

82. In the other three circles of each primary unit, to which we have already referred in describing the short-term health organisation, the resident staff will be only a public health nurse, a midwife and a trained *dai*. The woman medical officer of the unit should visit the headquarters of each of these units once a fortnight. The public health nurse should hold a weekly session while the woman medical officer should attend every alternate session. The same lines of activity should, as far as possible, be followed in the peripheral circle as those described for the maternity and child welfare centre at the headquarters of the primary unit.

83. *The Secondary Unit.*—The 200-bed hospital at the headquarters of the secondary unit should have about 50 beds reserved for maternity and gynaecological cases. In the second five-year period of the short-term programme the 200-bed hospitals constructed during the first five years will, it is hoped, be enlarged so as to provide 500 beds. In this case the provision for maternity and gynaecological cases should be raised to about 125 beds. The better facilities thus made available in these institutions will make a higher type of service possible, while the telephone and ambulance organization, which we have recommended, will help to extend these facilities to the more serious cases occurring in the primary units.

84. *The Provincial Headquarters.*—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 organisation of health services for women and children.

Social and Economic Factors

85. The two most important among these factors are inadequate nutrition, including malnutrition and under-nutrition, and the strain resulting from over-work in the home or outside.

Nutrition.—The pregnant woman, nursing mother and the growing child require a more generous and nourishing diet than the general population and the health services for these two sections of the population, howsoever elaborate and efficient, will fail to produce satisfactory results unless simultaneous measures are taken to improve their nutrition. An annual provision has been suggested in the budget of each primary unit in order to enable the woman medical officer to make suitable additions to the diet of pregnant women, nursing mothers and growing children.

Overwork.—The strain resulting from overwork affects a woman's health both during pregnancy and in the postnatal period. In the chapter relating to industrial health the grant of maternity benefits and compulsory abstention from work for a period of six weeks before and six weeks after confinement are recommended for all women employed in industry. We have suggested that these concessions should, in due course, extend to all women gainfully employed outside their homes.

Nurseries

86. The provision of nurseries or *creches* 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 industrialised countries. 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 organisation (*vide* Appendix 13, Volume III). The nursery in Soviet Russia serves a three-fold purpose, *viz.*, that of relieving the mother; of caring for the child and of educating the mother and child. The aim is to make children healthy in body and mind, to draw out their innate faculties and to make them self-reliant.

Maternity Homes

87. 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 centres. The strictest possible control should be exercised by local health authorities over the establishment and maintenance of such institutions. The provincial Ministry of Health should prescribe suitable standards in respect of these homes and should see that they are enforced.

HEALTH SERVICES FOR SCHOOL CHILDREN

88. In India, school health services are practically non-existent, and where they exist, they are in an undeveloped state.

The Functions of a School Health Service

89. The duties to be performed by a school health service fall into two main groups: (i) health measures, preventive and curative, which include (a) the detection and treatment of defects, physical and mental, and (b) the creation and maintenance of a hygienic environment in and around the school, and (ii) measures for promoting positive health. The last should include (a) improvement of the nutritional state of the child, (b) physical culture and (c) health education by formal instruction and the practice of the hygienic mode of life.

The duties enumerated in (i) above should be performed by the health organisation while those indicated in (ii) will devolve on the teacher. There should, however, be close co-operation between the health and education staffs.

Some General Suggestions

90. (i) In each primary unit the male medical officer should normally be put in charge of the school health service.

(ii) To begin with, this health service should be restricted to primary school children, their number being limited to 1,000, which is as much as the medical officer can look after efficiently.

(iii) At least two teachers from each school should receive training in certain elementary health duties and should receive an additional remuneration for attending to such duties.

Stages of Development

91. The proposed school health organisation should first be developed in an area close to the headquarters of a province, in association with the Department of Preventive Medicine in the medical college located there. The second stage would mark the extension of the school health programme to the districts in two steps, namely, to the headquarters of the secondary units and subsequently to the headquarters of individual primary units. Two more stages are envisaged, these being extensions of the scheme so as to include (1) the whole area of individual primary units and (2) the students of secondary and high schools and of colleges.

92. The school health work to be carried out in a primary unit should include all the main functions of a school health service to which we have already referred. We suggest that a school clinic should be established at the headquarters of each primary unit to perform duties in connection with the school health programme in the same manner in which the maternity and child welfare centre we have recommended is intended to help in the promotion of health

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work among mothers and children. Besides providing treatment for minor ailments to the pupils in all the schools included in the scheme, the clinic should undertake certain specialised 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. Such provision will be supplemented by a certain amount of routine treatment carried out in the school by the two specially trained teachers referred to above, under the guidance and supervision of the school medical officer. Follow-up work in the homes of the children by the public health nurse in order to discover and rectify, as far as possible, such defects in the home environment as are responsible for the illhealth of the pupil is also an important part of the preventive school health campaign.

93. We desire to see the school clinic developed into an organisation for bringing together the children, the parents and the teachers. For this purpose periodical meetings should be arranged at 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.

Co-operation between the Health and Education Authorities

94. *The 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. In each district, a Joint Committee of the District Health and District Education Boards should be established and this body should be responsible for ensuring that the necessary co-operation between the health and education authorities is secured.

95. *Provincial headquarters.*—At the headquarters of the province there should be a Co-ordinating Committee with the Director of Public Instruction and the Director of Health Services as members. The managements of private schools and of approved associations of teachers and of parents should also be represented on this Committee, which will advise Government on all matters relating to school health administration, including the distribution of grants-in-aid.

OCCUPATIONAL HEALTH INCLUDING INDUSTRIAL HEALTH

96. The conditions affecting the health of the worker may, broadly speaking, be divided into two groups, namely, those which he shares with the other members of the general community among whom he lives and those which are associated with the occupation he pursues. In regard to the latter there may be special hazards to health arising out of particular occupations. The development of anthrax by those handling wool or skins and hides or poisoning by lead, chrome and other substances which are used in a variety of trades or manufacturing processes are examples of such special hazards. There are also other factors which have their influence on the health of the worker and these include the lighting, ventilation and general sanitation of

the workshop or factory, the dust and noise associated with the working environment and the provision that exists for rest pauses, meals and personal cleanliness. Over and above the general provision for health protection which the worker can share with the other members of the population, he has the right to claim that special measures should be taken to counteract the adverse effects of those factors which are associated with his occupation. The provision of such special health measures is the function of an industrial or occupational health service. To a greater or less extent, all those who are gainfully employed outside their own homes will require the services of the occupational health organisation. While recognising this as the ultimate objective we realise 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.

The Functions of an Industrial Health Service

97. The functions of an industrial health service have been well described in the following words by the Social and Preventive Medicine Committee of the Royal College of Physicians, London, in their Second Interim Report which deals with industrial medicine:—

- (a) to promote the general health of the worker by providing a good working environment and fitting him to the latter;
- (b) to prevent occupational disease;
- (c) to assist in the prevention of injuries at work;
- (d) to organise a service for emergency treatment;
- (e) to help in restoring the injured and disabled to full working capacity;
- (f) to educate workers in the preservation of health and promotion of wellbeing and
- (g) to promote research and investigation.

These may be accepted as the objectives to be aimed at in organising an industrial health service in India.

98. The proposed industrial health service will not minister to the general medical needs of the workers. This function will have to be performed by the health service for the community as a whole. The industrial health organisation is intended to meet the needs of the worker in respect of that group of factors affecting his health which are associated with the occupation he pursues. The two services are complementary to each other and will together provide him with adequate medical care. The industrial health organisation should form an integral part of the Provincial Health Department and should be developed as such.

99. 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 utilised 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 utilised for establishing an industrial health organisation on the lines indicated above.

100. While these proposals for an industrial health service will obviously take time to materialise, we have put forward certain recommendations for early consideration and appropriate action by Governments. These recommendations cover a wide field and it is only the more important ones among them that are referred to here. For more detailed information reference should be made to Chapter X of Volume II of our report.

Maternity Benefit

101. The maximum period for maternity benefit for women workers under the different Provincial Acts is four weeks before and four weeks after childbirth. Under the International Labour Convention the period recommended is six weeks in both cases and we endorse this recommendation. During these periods a woman worker should be paid her full wages, because it is just at this time she requires nourishing food and special treatment.

Hours of Work

102. From the health point of view, we recommend that the maximum hours of work should be reduced to 45 hours a week, i.e., 8 hours a day for five days and 5 hours for another day in the week and that the Factories and other Acts should be amended accordingly.

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 which the occupation involves and the distance that the workers will have to walk back to their homes.

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

The period during which a worker may be continuously on night duty should be limited by statute to a fortnight.

Housing

103. In our opinion the housing of the industrial population is primarily the responsibility of the Governments concerned. The following minimum standards of housing are, we consider, 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. x 8 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. x 12 ft. x 10 ft. with a verandah, kitchen, bath-room 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 nightsoil may be avoided.

The Nutrition of the Workers

104. Our recommendations for improving the nutrition of the workers include making it obligatory for industrial establishments employing a minimum number of workers to maintain canteens providing suitably balanced diets at reasonable cost, the encouragement of workers by employers to observe regular meal hours, the strengthening and stricter enforcement of the law relating to the sanitary control of the production, distribution and sale of food, including measures against adulteration, the active promotion of schemes designed to improve milk production and its supply as an article of food to workers and the establishment of nutrition sections in Provincial Health Departments, which should carry out nutritional surveys among industrial workers and assist in improving the nutrition of workers through educative work among employers and employees.

The Zoning and Location of Industry

105. (a) Town and Rural Planning Acts should be passed by Provincial Legislatures setting up in each Province a separate Ministry for 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 Labour 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) 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, 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.

Employment of Children

106. (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.

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

HEALTH SERVICES FOR THE MORE IMPORTANT DISEASES

107. We shall deal here with the specific measures necessary for controlling the prevalence of the following diseases.

1. Malaria.
2. Tuberculosis.
3. Smallpox.
4. Cholera.
5. Plague.
6. Leprosy.
7. Venereal diseases.
8. Hook-worm disease
9. Filariasis.
10. Guinea-worm disease
11. Cancer.
12. Mental diseases and mental deficiency.

MALARIA

108. We have already pointed out that malaria is by far the most important disease in India from the point of view of morbidity and mortality and that the economic loss it entails is immense. A tragic feature of the situation is that much of the malaria in the country is man-made. In many cases roads, railways and irrigation projects have a sinister account to their credit, their embankments having caused conditions of water-logging favourable to the breeding of the malaria carrying types of mosquitoes. 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 being certain areas in Sind, the province of Madras and Mysore.

Our Recommendations

109. *Antimalaria organisations in the Provinces and at the Centre.*
—The Director, Malaria Institute of India, has pointed out that “an essential preliminary to the successful control of malaria in India is the formation of an adequately staffed *permanent* malaria organisation in each province, the activities of which should be linked up with those of the central organisation of the Government of India”. We fully endorse this view. Our recommendations, therefore, include the establishment of antimalaria organisations in the provinces as well as the strengthening of the staff of the Malaria Institute of India in order to enable it to fulfil its important tasks of advising provincial administrations in the development of antimalaria measures, of co-ordinating such work in the provinces and of training the higher types of malaria personnel for the country as a whole.

110. The general provincial plan we have recommended is the creation of an organisation at the headquarters of each province and

medical officer specially trained in antimalaria work, for operating in the affected areas in different parts of the province. The most essential requirements are (a) the provision of trained staff in adequate numbers and (b) the supply of drugs, appliances and other equipment necessary for carrying out effectively the campaign against the disease. We deprecate the idea of spending large sums of money on the erection of elaborate buildings in the early stages of our programme.

Drugs for Treatment

111. Quinine and mepacrine are the two drugs which are widely used for the treatment of malaria. There is already an indication that an even more effective synthetic product, paludrine, is likely to come into the field at an early date. We recommend that the following three general principles should guide the production of quinine and other antimalaria drugs:—

1. the prices at which antimalaria 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 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 other antimalaria drugs.*

112. *Quinine and mepacrine.*—If the estimate of 100 million individuals suffering from malaria every year is reasonably correct, it seems safe to assume that at least 120 to 150 million cases of the disease will have to be treated annually. The Malaria Commission of the League of Nations has recommended 75 grains of quinine as the minimum quantity required for the treatment of a case. On these estimates of malaria incidence in India the amount of the drug necessary for the country as a whole will be in the neighbourhood of about 1·5 million pounds per year, if quinine is alone used for treatment. The average annual consumption of the drug in the pre-war period in India was 210,000 pounds and, of this amount, only about a third was produced in India. The quantity consumed every year in this country would provide adequate treatment for about 19·6 million patients. As the objective to be kept in view for the immediate future, we recommend that sufficient quinine and mepacrine should be provided to meet jointly the requirements of at least 50 million patients. As regards quinine our immediate objective should be the raising of its production to the pre-war level of consumption in India from indigenous bark alone. As regards mepacrine, provision should be made for its production in the country in sufficient amount to meet the requirements of 30 million patients.

* Sir Frederick James 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. His views are set out in a note which is appended to the section on malaria in volume II of our report.

Anti-malarial Insecticides

113. The cultivation of the pyrethrum plant has been successfully undertaken in various parts of India including Kashmir, the Punjab Hill States, the United Provinces, the Central Provinces, Madras and Orissa. It has been estimated that, in order to make the country self-sufficient, pyrethrum cultivation will have to be extended to about 120,000 acres so as to produce an annual output of about 15,000 short tons (2,000 lbs. for a ton) of pyrethrum flowers. In D. D. T. an even more powerful insecticide has come into use.

114. As an insecticide the relationship of D. D. T. to pyrethrum 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 the use of the other. The cultivation of pyrethrum can, in this event, be replaced at short notice by other crops.

TUBERCULOSIS

115. Annually about 500,000 deaths take place from tuberculosis in India and 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. There is reason to believe that the incidence of the disease is higher in urban and industrialised areas than in rural regions. Owing to the migration of the labour population between industrial and rural areas and the increased facilities for rail and road transport, the tendency has been for tuberculosis to spread to the country-side. Certain factors such as malnutrition and under-nutrition and insanitary and overcrowded housing conditions also contribute their share to the dissemination of infection.

116. An essential requirement for controlling the spread of tuberculosis is provision for the isolation and treatment of infective cases. As against an estimate of 2·5-million infective patients in the country the total number of beds available for isolation is in the neighbourhood 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.

117. This brief statement of the existing position should help to show the magnitude of the health problem which tuberculosis presents in this country and the total inadequacy of the existing facilities for dealing with it.

Our Recommendations

118. In order to provide a comprehensive and integrated service the tuberculosis organisation should include, (1) a domiciliary service, (2) clinics, (3) hospitals, (4) after-care colonies, (5) homes for the incurable and, in addition (6) certain ancillary services.

119. *A home isolation and treatment service.*—A scheme for organised home treatment has been working in Delhi during the past few years under the guidance of the New Delhi Tuberculosis Clinic maintained by the Tuberculosis Association of India. This scheme has attained only very limited success, the reasons being (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 its working.

120. The question of housing seems to present the greatest difficulty, particularly in respect of tuberculosis patients of the poorer classes, who live in one-room tenements where isolation is impossible. We recommend that, as a part of the antituberculosis campaign, local authorities should construct and maintain a number of suitable dwellings into which the patient and members of his family can be removed. Patients among the poorer sections of the community will, on such removal, require to be provided with accommodation free of charge.

121. *The tuberculosis clinic.*—The clinic forms the centre from which curative and preventive work in tuberculosis will spread into the homes of the people. 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. Those patients whose condition is too advanced for attendance at the clinic, will receive domiciliary treatment from the medical and nursing staff of the clinic. During visits to the home the patient will be advised, by the doctor and the nurse, to carry out effective isolation, contacts will be persuaded to attend the clinic for examination and early detection of the disease and steps will be taken to promote the welfare of patients and their families by establishing contact between them and voluntary organisations interested in welfare work.

122. *Tuberculosis hospitals.*—The provision of sufficient hospital accommodation to meet the requirements of the country is bound to take many years and therefore in the early stages, only such patients as are likely to benefit should be admitted to hospitals.

123. Our proposals for the development of hospitals and clinics during the short-term programme are given below:—

Institutional service.

The first five-year period:

- (1) the establishment of a 200-bed tuberculosis hospital for each unit of 10 million population;
- (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 and
- (3) The establishment 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.

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 organised in association with

clinic to the nearest tuberculosis hospital for more satisfactory treatment than can be provided locally.

124. *After-care of patients.*—In a considerable proportion of cases tuberculosis patients do not completely recover their previous health and, in order to prevent relapse, it is essential that less strenuous working conditions and a more hygienic home environment should be provided for them on their return from hospital. To meet these requirements after-care colonies should be established in close association with every tuberculosis hospital.

125. *Homes for incurables.*—The need here is for the provision of such care as will make the final phase of sickness reasonably comfortable for the patient. We recommend that, while Governments should undertake the building and equipment of such institutions, their maintenance can 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.

126. *Travelling tuberculosis units.*—One way of extending the activities of the tuberculosis organisation outlined above is by providing travelling tuberculosis clinics based on the district clinic and working as far into the rural areas as possible. These units will have 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. These units should have a fixed itinerary and should make about 3-4 visits per month to each of the 30-bed hospitals and dispensaries at the headquarters of individual primary units in the areas under the scheme. Apart from the diagnostic and treatment facilities which these units can offer, they should also help the tuberculosis campaign by carrying out intensive education propaganda in those areas.

SMALLPOX

127. Smallpox is one of the three major epidemic diseases of India, the other two being cholera and plague. During the period of 60 years, 1880-1940, the average annual rate of smallpox mortality per hundred thousand of the population has varied from 10 to 80. Even after making allowance for such variability, there is reason to believe that the total incidence of the disease has decreased in the country as a whole. For instance if the two ten-year periods, 1902-11 and 1932-41, are compared and due allowance is made for the increase in the population of the country, the rates of mortality from smallpox per 100,000 of the population are seen to be 40 and 25 respectively. Nevertheless, it is a matter for serious concern that the average number of deaths per year from smallpox for the period 1932-41 should have been as high as 70,000. The annual epidemiological reports which are published by the League of Nations show that the rate of incidence of smallpox in India is the highest among all the countries for which statistics are given.

128. Striking evidence of the fact that the vaccination campaign in the country has not so far been carried out effectively is that, of

the total number of smallpox deaths at all ages, high proportions occur among infants under one year of age and among children between 1 to 10 years. During the five-year period, 1937-41, deaths due to smallpox among infants under one year, 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. If effective primary vaccination is being enforced in the country, it is children under ten who should have the highest measure of protection.

129. One of the serious consequences of smallpox is that, not infrequently, those who recover from it lose their sight partially or wholly. Blindness is a very serious handicap in life to all persons and is particularly so in the case of children with the prospect of a much longer period of disability than for those who lose their sight at a more advanced age.

Our Recommendations

130. *Primary vaccination and revaccination.*—Primary vaccination was compulsory in 1941 in only about 81 per cent of the towns and 62 per cent of the rural circles in British India. In the province of Bombay primary vaccination was compulsory only in 4.9 per cent of the rural circles while in the North-West Frontier Province, the United Provinces, Sind, Assam, Coorg and Ajmer-Merwara it was not enforceable even in a single rural circle. Revaccination has been made compulsory as a routine measure only in the province of Madras.

131. We consider it essential that primary vaccination should be made compulsory throughout the country without delay. We also recommend that other Provincial Governments should, as early as possible, follow the example of the Government of Madras in making revaccination compulsory.

132. *The 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 3 to 10 months and the salary paid to them ranges from a minimum of Rs. 10/- per month in Bengal to a maximum of Rs. 50/- to a first class vaccinator in Madras. In the provinces of Bihar and Orissa the vaccinators employed in rural areas are given no salary at all, the fees they may realise from the people for vaccinations carried out in their homes being their sole remuneration. They are normally engaged for work only during the vaccination season, October to March. Such conditions of service cannot attract and keep the right type of worker.

133. The lowest figure for the average number of vaccinations performed in a year by a vaccinator was recorded in Bihar in 1939, namely 1,520, as against an average of 2,951 for British India as a whole and the highest figure of 7,587 for the Punjab.

134. In the areas under our scheme vaccination against smallpox should be one of the normal functions of the public health inspectors, public health nurses and midwives employed in each primary unit

and the employment of a special class of vaccinators is not necessary. 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. During the first year of the working of the programme the total population of 40,000 in a primary unit should be vaccinated. For this individual members of the staff mentioned above will be required to devote only about 18 to 20 days of work.

135. In the areas outside our scheme it is equally essential that an intensive vaccination campaign against smallpox should be organised without delay. An important step in this direction is an improvement in the training and conditions of service of vaccinators in many provinces. The number of vaccinators employed will have to be increased adequately and, basing our recommendations on data available from Madras, we have indicated how other provinces may institute an effective campaign of primary vaccination and revaccination.

CHOLERA

136. Cholera is another preventible disease which takes a heavy toll of life in the country and shows a wide range of variation in its incidence from year to year. Some idea of this range of variation may be obtained from the cholera mortality figures for the province of Madras in 1939 and 1943. In the former the total deaths from the disease numbered about 2,000, the lowest incidence recorded for 60 years. In 1943 it spread to every district in the province and the registered mortality from this cause was 117,000. The incidence of cholera varies from province to province, those in which its prevalence is high being Bengal, Madras, Bihar and the Central Provinces and, to a smaller extent, Orissa and the United Provinces.

137. The measures required for the control of the disease fall broadly into two groups, (a) those which are permanent and (2) those which are of a temporary nature. The former include the following:—

- (1) the provision of protected water supplies;
- (2) the satisfactory disposal of nightsoil so as to prevent the possibility of contamination, by infective material, of food and water supplies and
- (3) sanitary control over the production, distribution and sale of food.

In regard to each of these the position in India today is far from satisfactory. Protected water supplies are available only in the larger towns and cities and they serve only small proportions of the population in individual provinces. Provision for the proper collection and disposal of nightsoil is quite inadequate in rural areas and in the majority of urban centres, including many towns and even certain cities. The sanitary control exercised over the production, distribution and sale of food leaves much to be desired in all parts of the country.

138. Anticholera measures of a temporary nature, are of special value when an outbreak of the disease takes place. These include;—

- (1) isolation and treatment of patients;
- (2) disinfection of infective material and
- (3) immunisation of the people by anticholera inoculation.

As regards (1) and (2) above little or no effective action, is being taken in most parts of the country, particularly in the rural areas. Isolation hospitals are few in number and even those that exist are far from satisfactory as regards their staffing and equipment. As regards anticholera inoculation, the popularity of this measure has been a process of steady growth. The people have come to recognise its value and are, broadly-speaking, willing to accept inoculation when an outbreak of the disease takes place.

Our Recommendations

139. *Permanent measures.*—We have suggested, in the chapters dealing with water supply and general sanitation, comprehensive programmes of development of urban and rural water supply and night-soil disposal systems. In providing these basic facilities for sanitary improvement, Provincial Governments should direct that, in fixing priority, consideration should be given to the incidence of cholera in individual towns and villages. In this way, the main centres of cholera prevalence can be brought under effective control and the spread of the disease from such sources of infection prevented. Simultaneously with these improvements the gradual extension, over the country as a whole, of the health organisation, we have recommended should help to introduce a large measure of control over the food of the people so as to ensure freedom from contamination. There will also be a rise in the general level of environmental hygiene. The combined effect of all these measures is bound to be a marked reduction in the incidence of cholera and other bowel diseases.

140. *Temporary measures.*—The temporary measures we have indicated above should be carried out by the primary unit staff as effectively as possible. The active assistance of the members of the Village Health Committees would prove invaluable in enforcing these measures.

Pilgrim Centres

141. Pilgrim centres have, in the past, played an important part in the spread of cholera. The adoption of special measures for safeguarding the health of pilgrim centres has now become an established practice in the country. In addition it has been found useful to enforce the compulsory inoculation of persons against cholera before they are permitted to attend such festivals. At the instance of the Central Advisory Board of Health this measure has been carried out by a certain number of Provincial Governments in selected festival centres with encouraging results. The adoption of this measure on a wide scale should prove to be an additional precaution against the possibility of outbreaks of cholera starting in festival centres.

PLAGUE

142. The history of plague in recent times dates from 1896 when it was introduced into the seaport of Bombay from China and spread

rapidly over very large parts of the country. In 1904 deaths from this disease reached the very high figure of nearly 1,150,000. Since then there has been a considerable reduction in the incidence of plague, the average annual mortality from this cause during 1939-41 being only about 19,350.

143. Plague is primarily a disease of certain rodents and human infection on an appreciable scale takes place only under conditions favouring close association between man and such rodents. In India the animal is the rat while, in other countries, the reservoirs of plague infection are certain other rodents. Man becomes infected from such animals through the bite of the fleas which live and feed on these animals.

144. Plague appears in two forms, bubonic and pneumonic, the latter being the more severe of the two. The rate of mortality in bubonic plague may be as high as 60 to 70 per cent among those who are attacked, while that for pneumonic plague is practically cent per cent.

145. Although the incidence of the disease has become very much reduced within recent years, the Director of the Haffkine Institute, Bombay, has pointed out that certain endemic areas exist in different parts of the country and that they constitute a constant threat in as much as, under favourable conditions, plague may spread from these centres to other parts of India. These centres are situated in cool and moderately damp areas from the Himalayas in the north through Central and Eastern India to the Deccan and the province of Madras.

Our Recommendations

146. The measures against the disease should mainly be directed against the rat as the primary reservoir of infection from which the disease spreads to man. The keeping down of the rat population in inhabited areas, particularly in the endemic centres of plague, is therefore an important preventive measure. Rats grow in numbers in human dwellings only when they can secure food and adequate protection. The elimination of these conditions is therefore the purpose to be kept in view. The systematic destruction of rats by various methods is also another important measure which should be generally adopted.

147. The steps to be taken for rendering the conditions in residential areas unfavourable to the growth of the rat population include (a) the construction of rat proof dwellings and rat proof grain stores and railway godowns, (b) control over the location of certain trades and industries which attract rats and (c) an improvement of the general sanitary condition of the towns and villages, as the throwing of garbage in public places encourages the breeding of rats by providing them with food. Our recommendations cover all these steps.

Treatment of Plague

148. 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. 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.

LEPROSY

149. The number of persons suffering from leprosy in the world has been estimated as somewhere about five millions and, of these, leprosy patients in India are believed to be at least a million. "There is a belt of high incidence including the whole of the east-coast and the south peninsula, including West Bengal, South Bihar, Orissa, Madras, Travancore and Cochin. In the central parts of India the incidence tends to be lower but there are some foci of higher incidence. There is a belt of moderate incidence in the Himalayan foot hills, running across the north of India, while in most of the north-west of India there is very little leprosy."*

150. In the highly endemic areas its incidence may range from two to five per cent of the population and, in restricted areas, it may even be as high as 10 to 15 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.

151. Cases of leprosy are broadly divided into two groups, the "neural" and "lepomatous" types. The former constitutes the "benign" form of leprosy and the other the more severe and infectious type. While for the country as a whole the proportion of lepomatous cases is estimated at about 20 per cent 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. In estimating the importance of leprosy as a public health problem the rate of incidence and the relative proportion of the lepomatous type should both be taken into consideration.

Our Recommendations

152. In order to promote antileprosy work on proper lines we put forward the following proposals for the short-term programme:—

- (a) the creation of provincial leprosy organisations;
- (b) an increase of the existing provision for institutional treatment of out-patients and in-patients;
- (c) development of group isolation colonies;
- (d) substantial financial help to voluntary organisations engaged in antileprosy work and
- (e) the establishment of a Central Leprosy Institute.

The Provincial Leprosy Organisation

153. As a preliminary step towards organising antileprosy work on sound lines a leprosy organisation should be created at the headquarters of each province, in which the disease is a definite public health problem, this organisation being made an integral part of the provincial health service. At its head will be the Provincial Leprosy

* Report on Leprosy and its control in India (1941) by the Special Committee appointed by the Central Advisory Board of Health.

Officer, who will be responsible for organising antileprosy work in all its branches.

An Increase of the Existing Provision for Institutional Treatment

154. The leprosy clinic is an important link in the chain of measures for the control of the disease and it should perform the dual role of providing remedial and preventive care to the people in the same manner that the tuberculosis clinic does in the campaign against that disease. A start should be made by providing a properly equipped and staffed leprosy clinic in association with every secondary health centre hospital. Existing leprosy clinics require to be staffed and equipped properly in order to improve the quality of the work that they are doing.

155. Existing provision for the isolation of leprosy patients is limited to about 14,000 beds, while infective cases requiring isolation may well be about a quarter of a million. We propose that, in the first five years of our programme, an additional 14,000 beds should be provided and that, in the next five years, an equal provision of another 14,000 beds should also be made.

Development of Group Isolation

156. An adequate expansion of institutional facilities so as to provide for the isolation of all the infective patients in the country can hardly be expected to materialise for a very long time to come. The possibility of developing group isolation therefore requires serious investigation. Certain points to remember in this connection 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.

157. Certain experiments for developing isolation colonies have already been carried out in this country and are being projected in the near future. Local conditions vary considerably in different parts of the country and we consider that group isolation colonies should be developed in all the more important areas where leprosy is a health problem. We have suggested an annual expenditure of Rs. 3 lakhs on the development of such colonies during the first ten years.

Financial Help to Voluntary Organisations

158. Missionary bodies have so far contributed much more to the development of antileprosy work in India than public authorities. For instance, it is understood that a little over 10,000 beds out of a total of 14,000 in the country are maintained in missionary institutions. In addition to a wide expansion of measures against the disease under the auspices of the Governments and of local health authorities, it will be necessary for voluntary effort to continue unabated in this field and we have therefore recommended provision to the extent of Rs. 197.5 lakhs during the first ten years to subsidise such effort.

The Central Leprosy Institute

159. We consider it necessary that a Central Leprosy Institute should be established, its main functions being (1) the training of

leprosy workers, (2) the active promotion of research in the subject and (3) the development of an information service providing the latest information regarding the treatment of the disease and antileprosy work in general for the benefit of Governments and organisations interested in leprosy in India.

VENEREAL DISEASES

160. The incidence of venereal diseases in India is unknown. A survey (the results of which were published in 1933) by Sir John Megaw, a former Director General of the Indian Medical Service, regarding the incidence of syphilis and gonorrhoea in this country showed that the rate of their total incidence was somewhere near 37 per 1,000 of the population. This is a sufficiently high figure 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-emphasised. Both syphilis and gonorrhoea 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. Gonorrhoea, in its turn, contributes to ill-health through joint troubles and various conditions affecting the genito-urinary organs in both sexes. In women it may produce sterility.

Our Recommendations

161. 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 promiscuity and to control prostitution.

162. Our recommendations under (1) include the provision of free and confidential treatment to all persons seeking such treatment, of facilities without payment of fees for personal prophylaxis and of adequate facilities for the diagnosis of these diseases as well as the creation and maintenance of a follow-up service and educational work among the people in regard to their spread and control.

163. Measures designed to discourage promiscuity in the community and to control prostitution are obviously more difficult to devise and enforce than the medical measures recommended above. 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. We have proposed the gradual provision of sex education to all sections of the community, such provision starting first with teachers in training schools and colleges and, through them, extending to school children and college students. Steps for controlling prostitution are also suggested. These include the enforcement of severe penalties on those who keep brothels and on landlords who promote the use of their premises for this purpose. As regards the prostitute, our recommendations are intended to provide her with adequate medical treatment for venereal diseases as well as to help her, through educative work, to return to the normal mode of life.

HOOK-WORM DISEASE

164. The hook-worm produces its harmful effect on the human host by the loss of blood it causes through feeding on him, by 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 the clotting of blood and thus promotes bleeding. The disease is widely prevalent in India. The labour populations in Assam and certain parts of South India and of the plantations in Coorg 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, 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.

165. Our recommendations regarding the provision of adequate arrangements for nightsoil conservancy in rural and urban areas will, if implemented, constitute an important step towards the control of hook-worm disease. Soil pollution through human excreta and the habit of walking barefoot constitute the two main factors responsible for its spread. What is therefore needed is that the 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. In the meantime mass treatment, by the administration of the appropriate drugs, should be carried out among the heavily infested groups of the population. The simultaneous development of a system of nightsoil conservancy for such communities, on lines suited to local conditions, is also necessary.

FILARIASIS

166. The disease leads to the permanent swelling of the legs and certain other parts of the body, besides causing recurring attacks of fever and inflammation of the lymphatic system. It is responsible for a considerable amount of preventible suffering and disability, although it does not cause death.

167. 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 Travancore and Cochin show areas of high incidence.

168. Extended research has failed to produce a satisfactory cure for this disease. The only effective measures against it known at present are those which are concerned with the control of the carrier species of mosquito. In the affected areas it is therefore essential that adequate control measures should be undertaken in order to secure an effective reduction in the mosquito population.

GUINEA-WORM DISEASE

169. Guinea-worm disease is widely prevalent in certain districts of the North-West Frontier 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, the 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.

170. The prevalence of the disease is dependent on opportunities for the infection of water supplies by persons harbouring the worm. In the affected areas step wells, tanks and other sources of water liable to contamination are responsible for keeping up the infection and the application of lime to such water supplies has been shown to be effective in sterilising them.

CANCER

171. Such evidence as is available seems to suggest that the relative incidence of cancer in India is probably as high as in western countries. As regards the causative factors "whether it be the cervix, the oral cavity, the penis, the skin or the gastro-intestinal 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."

172. 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 centres 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 centres at which such facilities are now available are shown in Appendix 20 of Volume III of the report.

(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 and Southern India respectively.

- (3) A considerable extension of diagnostic facilities will be necessary. The laboratories attached to the secondary unit hospitals, the provincial public health laboratory, organisation 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.

MENTAL DISEASES AND MENTAL DEFICIENCY

173. Conditions of mental ill-health may be divided into two broad groups, (1) mental disorder and (2) mental deficiency. The former may be either inherited or acquired and very often it is both. No age is exempt from mental disorder, although the types may vary at different age periods. A large proportion of these patients is amenable to modern methods of treatment.

174. 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. Although the condition is generally regarded as incurable, by proper care and supervision the majority of defectives can be made to lead useful but segregated lives, and they can also be prevented from becoming criminals and, in the case of girls, social menaces.

175. In England and Wales there were, at the beginning of 1937, about 129,750 patients under treatment in mental hospital, a proportion of 3.2 mental patients per thousand of the population. In America, the annual admission rate has varied from 5 to 8 per thousand in different years and in different States. In India there is no reason to believe that the rate of incidence of mental diseases is in any way less than those for England and the United States. While certain factors which are operative in those countries may not affect India to the same extent, other factors such as chronic starvation or under-nutrition, tropical fevers, anaemias and frequent childbirth in women, who are unfit for motherhood, are responsible for large numbers of mental breakdown in this country. In view of these considerations, even if the proportion of mental patients be taken as 2 per thousand of the population in India, hospital accommodation should be available for at least 800,000 mental patients as against the existing provision of a little over 10,000 beds for the country as a whole. 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.

176. As regards the possible numbers of persons suffering from varying degrees of mental disorder, who may not require hospitalisation and yet should receive treatment, and of those suffering from mental deficiency, it seems almost certain that the numbers are likely to run into several millions in this country, if the rate of incidence in England or America can be taken as even an approximate guide for making estimates for India.

Our Proposals

177. As against this background of mental ill-health the existing provision for the medical care of such patients is altogether inadequate

and unsatisfactory. We therefore 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.

178. (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.*—The creation of mental health organisations as part of the establishments of the Director General of Health Services at the Centre 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. 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 organisation which the country requires. We must leave this task to the health departments with the guidance of the specialists, whose appointment we have suggested.

179. (b) *The improvement of the existing 17 mental hospitals and the establishment of two new institutions during the first five years and of five more during the next five years.*—Radical improvements should be made in the existing mental hospitals in order to make them conform to modern standards. Provision should also be made for all the newer methods of diagnosis and treatment. Apart from such remodelling of existing mental hospitals we recommend the creation of 7 new institutions during the short-term programme, of which at least two should be established as early as possible during the first five-year period.

180. (c) *The provision of facilities for training in mental health work for medical men in India and abroad and for ancillary personnel in India.*—Nowhere in this country are available all the facilities necessary for the starting of a course for the Diploma in Psychological Medicine. We recommend 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 also suggest that, as soon as possible, similar diploma courses should be developed in the universities of other provincial capitals. In the meantime a certain number of carefully selected medical men, with some experience of work in mental hospitals in India, should be sent abroad for training. 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.

We have also made proposals for developing training facilities for non-medical mental personnel, including such workers as occupational therapists, psychiatric social workers, psychologists, nursing staff and male and female ward attendants.

181. (d) *The establishment of a Department of Mental Health in the proposed All-India Medical Institute.*—This Department is calculated to promote (1) the development of facilities for the undergraduate 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 facilities are created by these authorities in their own territories, (2) the promotion of research in the field of mental health and (3) participation in the organisation of a mental health programme for the area in which the Institute is located.

ENVIRONMENTAL HYGIENE

182. Under this head we deal with the subjects of (a) town and village planning, (b) housing, rural and urban, (c) water supply, (d) general sanitation, including conservancy and drainage, (e) river and beach pollution, (f) control of insects, rodents and other vectors of disease and (g) control of trades dangerous and offensive to the community.

TOWN AND VILLAGE PLANNING

183. Most of the populated rural and urban centres in the country have grown up in the past without due regard to the principles of planning. In the postwar period new large scale industrial developments, the execution of large public works and other activities will, in all probability, help to create new townships and settlements and thus further the process of urbanisation. It is, therefore, essential to regulate the growth of towns in accordance with the principles of sound town planning, to make a determined effort to eradicate existing slums and to prevent conditions in which they can again grow and thrive.

Our Recommendations

184. (1) 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. At the centre we are not suggesting the creation of such a Ministry because the direct responsibility for planning and execution will rest with Provincial Governments. But there should be at the Centre an expert in town planning who, for the purpose of administration, may be attached to the establishment of the Director General of Health Services under the Ministry of Health. This officer should be the consultant to other departments of Government such as the Railways and Posts and Telegraphs. All requests from the provinces for financial support from the Centre in respect of their town and country planning schemes should be scrutinised by him from the technical point of view. The Central Directorate of Town and Village Planning should also function as an information bureau for town planners throughout the country.

185. The Provincial Ministry of Housing and Town and Village Planning should have a technical expert as its adviser, who may be called the Director of Town and Village Planning, with suitable subordinate staff under him. All local authorities, improvement trusts, building societies, industrial organisations, private estate development concerns and government departments should submit their schemes for such development or slum clearance, if they come within certain prescribed standards, to the Provincial Ministry of Housing and Town and Village Planning for previous sanction. The Director of Town and Village Planning will be responsible for the technical scrutiny of all these schemes.

Town and Village Planning Legislation

186. 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, secure the enactment of an all-India measure. In either case, the proposed legislation should include all the requirements that modern conceptions regarding town and village planning would suggest for incorporation.

Planning in Urban and Rural Areas

187. *Large cities.*—In some of the larger and more congested cities in India improvement trusts have been engaged, for some time, in slum clearance and the improvement of housing. The results have not, however, been satisfactory in a number of cases, because cleared areas resulting from costly demolition operations have been allowed to be built over without adequate control. The existing legal and administrative procedure should, where necessary, be so modified as to ensure that such undesirable developments are not permitted to continue. We recommend that improvement trusts should be established in all the larger cities of the country for dealing with slum clearance and rehousing problems. One of the handicaps from which existing improvement trusts suffer 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 becomes available in sufficient numbers.

188. *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 view of size and importance, be such as to make them suitable for inclusion in the district health organisation we have proposed earlier. 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.

189. *Rural areas.*—In the early stages of our programme it will be difficult to extend planning operations into the rural areas as a whole. During this period, attention may be confined to the lay-out

of new villages which may be established as the result of developments in industry, mining, agriculture or the settlement of demobilised personnel. In the case of all new villages, the Provincial Director of Town and Village Planning should be consulted beforehand by the department concerned and he should design the lay-out.

Location of Industry

190. 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. We desire to see adequate provision for controlling the location of industry included in the proposed model legislation for town and village planning. Our suggestion that the lay-out of any new industry should be submitted to the Ministry of Housing and Town and Village Planning for previous approval should also apply to residential accommodation provided for industrial workers. A colony for such workers should not be permitted on a temporary basis for a longer period than three years and, even during this period, adequate provision should be made for such amenities as roads, water, drainage, sanitation and lighting.

Training Facilities for Town Planners

191. We make two recommendations. 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 from abroad should, if necessary, be recruited on short-term contracts and that training centres should be set up at least in a few universities in the country.

HOUSING, RURAL AND URBAN

192. Housing conditions in India present a deplorable picture. The impressions that we gained during our tours indicate extremely unsatisfactory conditions of housing in some rural and urban areas and, in particular, appalling conditions of overcrowding in industrial centres. The single room tenement is a common feature of even many of the more recently constructed housing accommodation in industrial areas. Such tenements often house more than one family and, in any case, have to serve as living room, kitchen and bedroom. The sanitation of these dwellings is usually inadequate and of a very rudimentary nature. Thousands of workers have been drawn to these industrial centres 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 and 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, open spaces, under trees, in cow sheds or in any temporary shelter.

Recent Housing Developments in Western Countries

193. Between the two world wars the provision of adequate housing for the people was recognised in most European countries as an urgent and important social problem and 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'. These national housing schemes have certain features which include control by the 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.

Our Recommendations

194. In India a long-term policy, comprehensive in scope and modern in outlook, is essential for a satisfactory solution of the housing problem. The objective to be attained is the creation of hygienic houses in adequate numbers and of adequate size, in "sanitated" areas equipped with all the facilities necessary for community life. In the execution of the housing programme Governments and public authorities should 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.

195. *Functions of the Provincial Governments.*—Upon Provincial Governments must rest the primary responsibility for dealing with housing and town and village planning. 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 it will be necessary to utilise every available agency if a comprehensive programme is to be planned and executed within a reasonable time. 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 five yearly stages. The Provincial Ministry of Health 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 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 are responsible for the execution of housing schemes and town and village planning.

196. *Functions of the Local Authority.*—Our recommendations for provincial and district health administration will, if implemented, establish certain new local authorities in the place of existing ones. We visualise the creation of separate district organisations to deal with health, education, public works and communications, in order to provide more favourable conditions for efficient administration. In

carrying out a province-wide housing and planning policy in urban and rural areas, the work of enforcement of standards, from the health point of view, will fall upon the district health organisation and its officers. 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.

197. *Housing standards*.—We have set out certain general recommendations regarding the minimum standards to be prescribed for all houses built under public or private auspices. For details regarding these standards reference may be made to paragraphs 25 to 33 of chapter XIII of Volume II of our report.

198. *Type plans*.—The legal enforcement of housing standards is only one method of approach towards raising the quality of construction. Type plans and estimates covering a considerable range of cost, material and sizes should be prepared. These plans and estimates should be based on local rates of cost, as far as possible, and should incorporate locally procurable material and they should be made readily available to the general public.

Housing for the Lower Income Groups*

199. We believe that an India-wide housing programme should give first priority to the needs of the lower income groups of the population. It is not easy to fix an upper limit of income suitable for all provinces. In the South it might be Rs. 100 to 150 a month and in the North Rs. 150 to 250. The limit would have to be fixed by each Provincial Government.

200. *Urban areas*.—In many towns and cities industrial workers live interspersed with the general population and the housing problem must therefore 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. 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 centres. We have already said that the responsibility for providing houses for the people rests on 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.

201. *Rural areas*.—The housing problem in rural areas presents special difficulty. 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. As in the case of housing in urban areas, 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 interest. 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 in the existing rents in the case of housing improvement.

WATER SUPPLY

202. According to the 1939 report of the Public Health Commissioner with the Government of India only 253 towns out of a total of 1,471 towns of all sizes in British India possessed protected water supplies. The population served by these was about 12.7 millions 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.

Rural water supplies are drawn mostly from wells, tanks, rivers and streams and they are almost completely unprotected.

Our Proposals

203. 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 the scheme should not be left to local authorities and sufficient funds should be made available to complete the programme within this period. Technical bodies, which may be designated Central and Provincial Water and Drainage Boards, should be established in order to assist Governments in the planning and execution of water and drainage schemes on a comprehensive scale.

204. *Functions of Water and Drainage Boards, Central and Provincial.*—The Central Board will perform the dual task of carrying out, in the Central Administered Areas, the same duties which the 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 its general policy of promoting co-ordinated effort in the provinces and of giving financial aid and technical advice in the furtherance of their water and drainage schemes.

205. The more important among the functions, to be performed by the Central and Provincial Boards in their respective areas include (1) the conservation of the available sources of water in their respective territories and its allocation to the different needs of the community, (2) the general planning of water supply and drainage schemes and the preparation of a priority list in respect of such schemes, (3) various technical matters such as the standards to be prescribed for the purification of water and sewage, the training and registration of water operators and the investigation of special local problems such as the purification of trade wastes, removal of fluorides, etc., and (4) the recommending of grants to the Governments concerned for water and drainage schemes.

Water Conservation on an Inter-provincial Basis

206. The importance of this question was forcibly brought to our notice by the Superintending Engineer, Public Health Engineering Department, the United Provinces. He said "the depletion of the main rivers in this province, particularly 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 of several large towns in this province, particularly Agra and Cawnpore." He also pointed out that it has aggravated another problem, namely, large scale river pollution from trade wastes.

207. The question of conserving all the available sources of water throughout the country and of so allocating the supply, from a common source, to meet the reasonable demands of 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 on such a matter 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. We consider that the same procedure should apply to inter-provincial problems of river pollution by trade wastes and sewage. Even when an urgent decision has to be taken 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.*

208. As regards the other subjects included under the heading "Environmental hygiene" such as general sanitation, river and beach pollution, control of insects, rodents and other vectors of disease etc., we have set out detailed proposals in the relevant portions of chapter XIV of Volume II. These, if implemented, will, it is anticipated, make for a considerable improvement of the existing unsatisfactory state of affairs.

QUARANTINE

International Quarantine

209. As regards international quarantine two aspects require consideration. One is prevention of the export of infection in respect of the diseases recognised 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 enforced in India are considered reasonably complete and satisfactory.

210. 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. 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 airports and their surrounding

*Mr. P. N. Saprú does not agree with the above recommendations for dealing with these difficult problems. He has dealt with his view in a note which is appended to chapter XIV of Volume II of our report. The views of the rest of the Committee on Mr. Saprú's note will be found in paragraph 22 of the same chapter.

areas and it is therefore essential that the Central Government should be able to carry out a common policy throughout India.

Internal Quarantine

211. Internal quarantine is concerned with the enforcement of measures designed to control the spread of infectious diseases between neighbouring units of administration, namely, the provinces and Indian States. We make the following recommendations:—

212. (1) The Central Government should be responsible for the enforcement of all measures necessary to prevent the inter-provincial spread of infectious disease. In this connection India may well follow the practice which is in existence in the United States of America. In that country "the Federal Health Service has control of sanitation in interstate traffic" including supervision of the sanitary facilities on all interstate vehicles. The Federal Government also assists the States in the control of communicable diseases within their own territories, if desired to do so. The Central Government in this country should be similarly empowered to control the inter-provincial spread of epidemic diseases.

213. (2) The Central Board of Health 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. The whole field of possible co-operation should be examined on a wide basis and a common programme of action drawn up under the auspices of the Board.

214. (3) The desirability of creating an inter-provincial fund for carrying out the measures outlined above should be considered, the Central and Provincial Governments making their contributions to this fund on some agreed basis. Such a fund will also constitute an insurance for all Governments against possible disasters such as famines, floods and earthquakes.

215. (4) The measures described above for the enforcement of internal quarantine can hardly be effective without the active participation of Indian States. Such participation can be of value only if those States possess a reasonably good health organisation. The more important of the States probably satisfy this condition. If, in the beginning, even these can be brought into the scheme by mutual arrangements between British India and the States, the range of activity of the internal quarantine organisation and its effectiveness will have been greatly increased.

VITAL STATISTICS

216. Errors in existing vital statistics in India fall under three heads, (1) incompleteness in the recording of the events, (2) inaccuracy of the registered cause of death and (3) faulty compilation. Registration of vital statistics in all municipalities is, generally speaking, a function of the municipal public health department. In the rural areas, in most provinces the Registrar is the police officer in charge of the *thana* (police station) and the person responsible for reporting births, deaths and cases of notifiable diseases from individual villages is the *chowkidar*, who is perhaps the lowest grade of public servant and is generally illiterate. In the province of Madras the Registrar is the headman of each village.

217. The recorded vital statistics are passed on, through a series of officers, to the Director of Public Health in each province. Compilation of the data is carried out at the different stages of transmission. Madras forms an exception to this general statement. Here the number of intermediary stages has been reduced, the village headman passing on his report to the *Tahsildar* of the *taluk* in which the village is situated and the latter sending it directly to the Director of Public Health. Compilation of the data for the whole province has been centralised in the office of the latter officer. This system has been found to be satisfactory and has been recommended to other provinces by the Central Advisory Board of Health.

RECOMMENDATIONS

The Areas served by our short-term Programme

218. *The creation of four registration offices in each primary unit.*—The placing of the registering authority as close as possible to the people is desirable in order to improve vital statistics. We therefore recommend the establishment of four registration offices in each primary unit, one of these being at the headquarters of the unit. The public health nurses and midwives should be made Registrars of Births and Deaths and should be responsible for ensuring that these offices are kept open on the required dates and during the stated hours.

219. All the members of the public health staff employed in the primary unit should systematically check the birth and death registers by house to house enquiry, when they visit villages on their routine duties. In addition, we anticipate that the village committees we have suggested will help to bring on record events which might escape the notice of the *chowkidar* as well as to awaken, in the villagers, a sense of personal responsibility in regard to registration.

The Areas outside our Short-term Programme

220 We recommend the employment of non-medical personnel, with some elementary type of training, as Registrars in the areas to which our health programme is not extended. Each man's range of jurisdiction should be limited to such a number of villages as would enable him to visit all of them within a period of about 6 days. During three days in the week he should attend the registration office and the remaining days should be devoted to an inspection of the work of the *chowkidars* in the villages within his area.

Certain Other Proposals

221. (a) *House lists in villages and sample surveys.*—We recommend the preparation and maintenance of house lists for individual villages. 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. 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 subcontinent like India the use of the sampling method is eminently suitable for the collection of demographic information of various types and the provision of an accurate house list for each village will prove invaluable for sample surveys.

222. (b) *The provision of adequate incentive to the people for the registration of births and deaths.*—An effective method of stimulating interest in the people for the registration of vital statistics will be

by creating conditions requiring, in an increasing degree, the production of proof of age, community, parentage etc. If courts, schools etc. 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.

223. (c) *Compulsory registration of vital statistics.*—In the areas in which our scheme will be introduced 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 compulsion should be introduced gradually. The enforcement of the law through the prosecution of offenders is essential if definite improvement is to be secured.

Administrative Organisation

224. *The central organisation.*—We recommend the appointment of an officer with the title of Registrar General of Vital and Population Statistics. He will be attached to the Central Ministry of Health and will be responsible for the collection, compilation, study and publication of vital statistics from all parts of the country, for the carrying out of the census at periodical intervals and for continuous population studies. He will work independently of the Central Health Department but in close co-operation with it. He should publish an annual report on the population of India incorporating such information as is available regarding existing conditions and possible tendencies for the future.

A "medical section" should be created in the Registrar General's office for the purpose of providing statistical help to the Central Health Department in its day to day administration and in the carrying out of special investigations.

225. *The provincial organisation.*—The provincial statistical organisation should correspond to that 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 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 co-operation with, the Director of Health Services.

The provision of "a medical section" in the office of the Provincial Registrar for the same functions as those suggested in connection with the Central Health Department is also necessary.

We have also made suitable recommendations for a district vital statistics organisation, which will work under the control of the Provincial Registrar.

226. The employment of statisticians in increasing numbers will become necessary in the vital statistics, health and other departments of Government. Industry is also likely to employ a growing number of persons trained in modern statistical methods. In the circumstances we recommend the development of facilities for statistical training of a high order in the universities and in certain other centres.

PROFESSIONAL EDUCATION

227. Our main object during the short-term programme should be the provision of adequate numbers of trained staff in all categories, in order to facilitate the development of our health programme with the least possible delay. Before indicating briefly our proposals for the expansion of existing provision for professional education in the

field of health, we may consider certain general questions which are relevant to the subject.

The Target in regard to the Production of Doctors

228. We have placed the target, at the end of the first ten years of the programme, in regard to the production of doctors at an annual output of 4,000 to 4,500 as compared with less than half that number of graduates and licentiates combined now being produced each year. To man the new medical colleges with suitable teaching personnel we anticipate that the All-India Medical Institute, the establishment of which we are recommending, will provide a steady, if limited, stream of teachers of the highest quality. In addition we have suggested that at least 200 carefully selected persons should be sent for overseas training in order to equip themselves for filling teaching posts in the country.

The Type of Doctor for the Future

229. Having given serious consideration to the suggestion that, in the conditions now prevailing in the country, it might be desirable to provide both fully trained doctors and a less-elaborate type of medical man, the conclusion which the majority of us arrived at is that, having regard to the limited resources available for the training of doctors, it would be to the greater ultimate benefit of the country if these resources were concentrated on the production of only one and that the highly trained type of physician whom we have termed the "basic" doctor.*

Admission to Medical Colleges

230. We feel that, as far as possible, the applicants best qualified to make use of the opportunities provided should be admitted into

*Six of our colleagues (Sir Frederick James, Dr. Vishwa Nath, Messrs. Sapru and Joshi, Pandit Maitra and Dr. Butt) agreed to the advantage of having one single type of medical practitioner, but in view of the overall shortage of doctors, felt that the early realisation of this ideal must be sacrificed to the immediate needs of the country. In their view the imperative and fundamental need in India was the large scale production of trained medical personnel of all kinds and to that end were prepared to use every possible means, including the adoption of a shorter licentiate course to increase, both rapidly and substantially, such personnel.

The majority view, while recognising the need for as rapid an expansion of medical personnel as possible, has taken note of the fact that the "basic" doctor will receive adequate training in the community and preventive aspects of medicine and that he will, therefore, be much better equipped for fulfilling the functions which have been proposed for a medical officer in our programme than a licentiate with his more limited background of general education and of professional training. Moreover, the "basic" doctor, 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 beyond the capacity of a less efficiently trained person. It seems therefore likely that the anticipated advantage from a larger out-turn of doctors by the continuance of the licentiate course will be largely counterbalanced by the more efficient and extended service which the "basic" doctor will be able to provide. It is also considered that the production of two types of doctors is to be deprecated on general grounds, because the person with a lower status naturally tends to develop an inferiority complex and a chronic discontent which cannot but be inimical to good work.

A separate note favouring the continuance of licentiate teaching by Drs. Vishwa Nath and A. H. Butt is given in Chapter XVIII of Volume II of the report. On the other hand, three other members (Drs. Amesur, Narayanrao and Wadhvani) consider that admissions to medical schools must be stopped forthwith and that such medical schools as can be up-graded should be converted into colleges even before improvements to existing colleges are carried out. Their note will also be found at the same place in chapter XVIII.

the medical colleges. We realise that there are factors which militate against the application of this principle in its entirety and that communal considerations cannot perhaps be ignored in the present state of the country. We suggest that one-third of the admissions to every medical training institution should be by pure merit and that the remaining seats may be divided among all the communities, provided the best candidates from each community are selected.

231. In view of the importance of increasing to a large extent the number of women doctors in the country we recommend that about a quarter to a third of the admissions in the medical colleges should be reserved for suitable women candidates, if they are available.

Stipends to Medical and Nursing Students

232. In Russia medical education is free and in the United Kingdom, the Goodenough Committee has recommended that one-third of the admissions to medical schools should be free. In order to prevent economic barriers standing in the way of suitable persons entering the medical profession we would like to see that all those, who are willing to enter the public service after successfully completing their course, should be given an annual stipend of Rs. 1,000, a part of its being recovered from them later in easy instalments. In view, however, of the large financial outlay that this proposal involves we have included, in our estimates, provision only for 50 per cent. of the entrants.

The need for nurses is even greater than that for doctors, there being probably no more than 7,000 registered nurses at present in the country as a whole. On the other hand the implementation of our short-term programme will require approximately 80,000 nurses. We have suggested the provision of a stipend of Rs. 60 per month for pupil nurses, a part of the amount thus advanced being eventually recovered from them in easy instalments.

MEDICAL EDUCATION

Undergraduate Education

233. Considerable thought has been given by us to the type of training necessary for the evolution of the "basic" doctor and advice was sought from a strong and representative panel of experts in the field of medical education from different parts of the country.* The main ideas underlying the changes recommended in the undergraduate curriculum include a reorganisation of the teaching both in the pre-clinical and clinical fields; a reduction in the hours of didactic instruction in certain subjects and an emphasis on the inclusion of principles and methods which will enable the student to learn for himself, think, observe and draw conclusions; the establishment, in every medical college, of a Department of Preventive and Social Medicine so as to give the student an insight into social health problems by contacts with home and community life and the inclusion of a year of "internship" after the qualifying examination, of which three months will be devoted to work in a public health unit and the remaining period in a hospital of approved standard. Throughout the whole course, the importance of research should be stressed and whole-time teachers should themselves engage in research and

*For detailed information regarding our proposals reference should be made to the relevant sections in Chapter XVIII of Volume II of the report

encourage any student showing an aptitude or leaning towards this important aspect of his work to participate in research.

234. Our programme of expansion of educational facilities includes the improvement of existing colleges, the conversion of suitable medical schools into colleges and the establishment of new colleges in different parts of the country.

Postgraduate Education

235. Postgraduate education should be devised to meet two different needs. They are, (a) the training of consultants and specialists and (b) the training of practitioners desirous of practising a speciality without the definite status of a specialist. In the case of (a) such training will naturally involve several years of work in special departments and hospitals and lead to a higher qualification such as the M.D. or M.S. In the case of (b), the training in the speciality concerned may range from 12 to 18 months under suitable guidance. We recommend that courses should be available in (i) Oto-Rhino-Laryngology, (ii) Dermatology, (iii) Radiology, diagnostic and therapeutic, (iv) Ophthalmology, (v) Obstetrics and Gynaecology, (vi) Venereology, (vii) Anaesthesia, (viii) Psychiatry, (ix) Pediatrics, (x) Tuberculosis, (xi) Malariology, (xii) Blood transfusion and resuscitation and (xiii) Orthopaedics.

236. We have suggested the establishment of a special organisation, the Central Committee for Postgraduate Medical Education, to be responsible for laying down standards in respect of postgraduate training in particular subjects and for promoting the development of facilities for such education in different parts of the country on a co-ordinated basis. We have also made suggestions for the apportionment of cost of such institutions between the Central and Provincial Governments.

Refresher Courses for General Practitioners

237. One of the most serious handicaps in raising the general standard of medical practice in India is the absence of any provision for refresher courses. There are several lines along which 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 | } spread over weeks or
months organised on a
systematic basis. |
| (b) whole-day courses | |
| (c) half-day courses | |

(iii) One educational session once a week or fortnight conducted throughout the year.

(iv) Short-term posts in a recognised hospital for periods ranging from one month to three months.

We recommend that facilities for refresher courses should be developed in all hospitals attached to the secondary health centres, district health centres, medical colleges and the headquarters of each province.

- 238. We have also made recommendations regarding the provision of training facilities in tuberculosis, mental hygiene and dietetics.

Special Provision for Licentiatees

- 239. There are two types of training that may be given, (1) training which will enable licentiatees to obtain a university degree and (2) advanced training in the specialities.

240. (1) *Courses leading to degree qualification.*—The All-India Medical Council has suggested certain changes which some universities have accepted, the result of which will be that the licentiate can within 18 to 24 months obtain the degree of M.B.B.S. Special concessions to those who were serving in the armed forces so that they may, after demobilisation, proceed to a degree have also been recommended. We suggest that it should be the endeavour of every university and every medical college to reserve a sufficient number of places for licentiatees so as to enlarge substantially their opportunities to obtain a medical degree.

241. (2) *Advanced training for licentiatees.*—There are at present only a few centres where such training can be obtained by licentiatees, the School of Tropical Medicine, Calcutta, and the All-India Institute of Hygiene and Public Health being two institutions which afford opportunities for them to acquire their diplomas. It is also understood that the Government of Madras have introduced special courses in Ophthalmology, Obstetrics and Gynaecology, Tuberculosis and Clinical Laboratory Sciences for licentiatees. Such diplomas should be made more freely available to them by other authorities in different parts of the country.

DENTAL EDUCATION

242. We suggest that provision should be made for the training of three types of dental personnel, (1) the dental surgeon, (2) the dental hygienist and (3) the dental mechanic. The responsibility for the training of the dental surgeon will have to be shared between medical and dental colleges, while the training of the other two classes can be undertaken entirely by the dental colleges. In view of the difficulty in obtaining well trained dental teachers during our short-term programme, the number of dental colleges that we propose should be opened in the country is limited. We recommend that dental colleges should be established at Calcutta, Bombay, Madras, Lucknow and Patna and that the dental college at Lahore should be expanded. Each dental college for postgraduate students should be associated with a medical college so that the teachers of the latter can assume responsibility for the instruction of dental students in those subjects which form part of the normal studies of the undergraduate in medicine.

Postgraduate Dental Education

243. Appointments as "house surgeons" should be instituted in all dental hospitals run in conjunction with the medical colleges so that dental training on a salaried basis may be available for graduates. In view of the present shortage of teachers, 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 Master of Dental Surgery. As a temporary measure dental

graduates should be encouraged to proceed overseas to obtain higher qualifications as well as pursue training in special subjects.

Dental Legislation

244. Dentistry as a science can make little progress in the country until it is upheld by suitable legislation directed to compulsory registration and prohibition of practice by unregistered persons. Instead of each province having its own Dental Act, it is suggested that comprehensive all-India Dental legislation should be enacted.*

PHARMACEUTICAL EDUCATION

245. We consider it necessary to provide educational facilities for three classes of personnel, (1) licentiate pharmacists, (2) graduate pharmacists and (3) pharmaceutical technologists. The first class is intended to provide for the large number engaged in dispensing work in chemists' shops, dispensaries and hospitals. The course for the graduate pharmacist will be designed to train the smaller number who will be engaged in manufacturing concerns, analytical laboratories and educational medical institutions. The third type of course is for those desiring to take up the manufacture of pharmaceuticals and drugs on a commercial scale. For them there should be, in addition to the graduate course in pharmacy, an additional course of one year in chemical technology, design, equipment, etc.

As soon as pharmaceutical licentiates become available in sufficient numbers the training of compoundingers should be dispensed with.

EDUCATION OF PUBLIC HEALTH PERSONNEL

Medical Men

246. We have already referred to the setting up in medical colleges of adequately staffed and equipped Departments of Preventive and Social Medicine and the inclusion of a reasonably high standard of training in this important branch of medicine in the curriculum of the undergraduate medical student. The postgraduate training now provided through the Diploma in Public Health will, we believe, largely be incorporated in the future in the course of training for the undergraduate. 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 specialised 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 the subject concerned, the course of instruction ranging ordinarily from 3 months to one year. The second will be for those who desire to attain the status of specialists in preventive-health work. For them the period of training will be from 3 to 5 years, the candidates being attached to the Preventive and Social Medicine Department of a medical college and being associated more and more with the

*Mr. N. M. Joshi is, however, of the view that such legislation is premature and that, if it be passed, it should not be made applicable to those areas where the services of a registered dentist are not available within a reasonable distance.

teaching, research and administrative activities of that department, including participation in the field training given to students.

Public Health Engineers and others

247. Our proposals for postwar health development require a large number of qualified public health engineers for the tackling of the problems of environmental hygiene. A beginning in training can be made at the All-India Institute of Hygiene and Public Health, Calcutta, in collaboration with the Bengal Engineering College and the Calcutta University. At a later stage it is proposed that this subject should occupy a definite place in the course of studies provided at the different engineering colleges so that instruction in public health engineering should form a part of the qualification of all engineers. We have also set out proposals for the training of public health inspectors and public health laboratory workers.

THE TRAINING OF NURSES, MIDWIVES AND DAIS

248. The conditions under which nurses have been required to carry on their profession in the country are deplorable. These include lack of professional status, insufficient pay for senior positions, gross under-staffing in hospitals and consequent overwork, deplorable living conditions accompanied by overcrowding and lack of recreational and cultural facilities as well as absence of provision for general superannuation or pension schemes.

249. The number of nurses available in the country is probably about 7,000, while our short-term programme will itself require about 80,000 nurses. Without a considerable increase in their number it is impossible to proceed with the development of hospital and other institutional facilities and with the organisation of the public health nursing service for curative and preventive work in the homes of the people. In Chapter I of Volume I of our report we have suggested that, by 1971, the number of trained nurses available in the country should be raised to 740,000. An essential step towards the achievement of this objective is the removal of the existing unsatisfactory conditions of training and service and we have made proposals designed to remove these conditions.

250. The very large majority of nurses who pass out of nursing schools will be absorbed in the public health services. Even so, there would remain a certain number outside this service. We have in mind such nursing services as are maintained by private bodies including Missions. For those who are in public service, provision for old age and insurance against illness, illhealth and disability will form part of the conditions of their service. We would suggest that, for those who are employed by private bodies, provision should be made through a scheme corresponding to the "Contributory Federated Superannuation Scheme for nurses and Hospital Officers" which was introduced in Great Britain in 1928 and has been, it is understood, functioning satisfactorily.

251. As regards training facilities our proposals include the establishment of preliminary training schools which will give elementary instruction to students who wish to become nurses, midwives, public health nurses and hospital social workers as well as the establishment of successive groups of training centres for nurses. In view of the extreme shortage of nursing personnel we have recommended that

the first group of 100 training centres, each taking 50 pupils, should be started two years before the health organisation begins to be established, that another set of 100 centres should be created during the first two years of the scheme and that a third group of the same number of centres should be established before the third year of the second quinquennium.

251. (a) We have suggested that there should be two grades in the nursing profession with corresponding types of training, a junior grade and a senior grade. The entrance qualification for the former should be, we have suggested, a completed course for the middle school standard and for the latter a completed course for the matriculation.

252. We have also recommended the establishment of nursing colleges in order to provide a five-year degree course in nursing as well as advanced courses in hospital nursing administration, in the teaching of nurses and the training of public health supervisors.

Male Nurses

253. Owing to the existing social conditions and customs in certain parts of India, male nurses will have to play an important part in the health programme. Male nurses and male staff nurses should be trained and employed in large numbers in the male wards and male-outpatient departments of public hospitals, thus releasing women workers for other work.

Public Health Nurses

254. We have also made specific proposals in regard to the training of public health nurses. They are fully qualified nurses with training in midwifery also. In addition their educational programme should stress, throughout, the preventive point of view. The curriculum should integrate 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.

Midwives

255. The number of midwives actually available for midwifery duties in the country is probably 5,000. In order to provide one midwife for every 100 births, approximately 20 times that number or 100,000 midwives will be required for British India.

256. Existing training schools for midwives require considerable improvement. The most serious drawbacks are (1) lack of properly trained and well equipped supervisory staff, (2) lack of facilities for antenatal and postnatal work, (3) lack of domiciliary practice and (4) lack of opportunities for witnessing complicated cases of labour. We have laid down certain fundamental requirements which should be met before an institution is recognised as a training centre for midwives and have also made detailed recommendations for their training courses.

Dais

257. The continued employment of these women will, for a period, be inevitable. While recognising that attempts to train the *dai* and make her reasonably satisfactory in the practice of midwifery have in many cases failed, the discrepancy between the existing number of midwives and that required to meet the needs of the country is so great that, as an interim measure, the possibility of elaborating

a system of training whereby the most effective use might be secured out of this type of personnel cannot be ignored. We have described in some detail the experience that one of us, (General Hance) has had in developing a midwifery service through trained *dais* in the North-West Frontier Province, where the scheme achieved a reasonable measure of success. We also understand from another member of our Committee (Dr. Butt) that attempts to improve the normal practice of midwifery by *dais* through suitable training have been equally successful in the Punjab. We have, in the circumstances, advocated the training of *dais* as an interim measure until an adequate number of midwives will become available and have made certain suggestions for their training for urban and rural practice.

MEDICAL RESEARCH

Existing Medical Research Activities

258. Organised medical research at the present time depends mainly on two organisations (1) the Central and Provincial Government Laboratories and the Medical Research Department and (2) the Indian Research Fund Association. The more important institutes and laboratories existing in the country for the promotion of medical research are shown below:—

(1) The Central Research Institute, Kasauli, (2) The Haffkine Institute, Bombay, (3) The King Institute, Guindy, Madras, (4) The Pasteur Institute of South India, Coonoor, (5) The Pasteur and Medical Research Institute, Shillong, (6) The School of Tropical Medicine, Calcutta, (7) The All-India Institute of Hygiene and Public Health, Calcutta, (8) The Malaria Institute of India, Delhi, and (9) The Nutrition Research Laboratories, Coonoor.

259. Of these, the Central Research Institute, the All-India Institute of Hygiene and Public Health and the Malaria Institute of India are maintained by the Central Government, the Nutrition Research Laboratories by the Indian Research Fund Association and the other institutions, with the exception of the Pasteur Institute of South India, by the Provincial Governments concerned. The last is the property of the Pasteur Institute Association, a body registered under the Societies Registration Act of 1860, and its management is vested in a Central Committee of which the Surgeon General with the Government of Madras is the Chairman and the Director of the Institute is the Secretary. For information regarding the development of these research laboratories and the work that has been accomplished by them, reference should be made to Chapter XIV of Volume I of our report.

The Medical Research Department

260. The medical research department was established by the Government of India for the provision of a permanent cadre of specially selected and trained officers for the furtherance of research. With the creation of Central and Provincial Government laboratories the officers of this department were appointed as Directors and Assistant Directors of the various Government laboratories. More recently, however, the extended activities of the provincial laboratories have necessitated the employment of workers for special duties and they have been appointed, as required, without drawing upon the medical research department. Officers of the latter department have been

placed on foreign service, from time to time, with other organisations such as the Indian Research Fund Association and the Pasteur Institute Association.

The Indian Research Fund Association

261. The Indian Research Fund Association is a registered association in close touch with the Government of India, from which its funds have been mainly derived. The chief objects of the Association are (1) to initiate, aid, develop and co-ordinate medical scientific research in India, to promote special enquiries and to assist institutions for the study of diseases, their prevention, causation and remedy; (2) to publish papers or periodicals in furtherance of the objects of the Association and (3) to propagate knowledge regarding the causation, mode of spread and prevention of diseases. The entire control and management of the affairs of the Association are vested in a Governing Body, its President being the Hon'ble Member in charge of Health in the Governor General's Executive Council and its Secretary the Public Health Commissioner with the Government of India. The Governing Body appoints a Scientific Advisory Board to advise on technical matters and on allocation of funds, the Chairman of which is the Director General, Indian Medical Service, and the Secretary the Public Health Commissioner. The Association approves an annual programme of research, sanctions grants-in-aid of research and, in certain cases, may constitute special enquiries. An annual conference of medical research workers is normally held, at which the work of the past year is reviewed and proposals for the coming year are put forward.

RECOMMENDATIONS

262. We recommend the constitution of a statutory organisation consisting of:—

(1) a Scientific Board, which will be the executive machinery of the organisation and

(2) an Administrative Body which would form the link between the Board and the Government of India and exercise general supervision over the working of the organisation.

The Scientific Board

263. The composition of the Board should include medical research workers of standing and experience, representatives of universities and medical colleges, representatives of the principal scientific bodies in India, prominent workers in the field of public health and clinical medicine, non-medical representatives of allied and fundamental sciences and persons with experience of health administration. The work of the Board should be aided by the formation of an adequate number of expert advisory bodies for special subjects.

Administrative Body

264. The Administrative Body should have the following type of membership:—

(a) the Minister of Health in the Central Government; (b) representatives of the Government Departments of Agriculture, Industry, Labour and Finance; (c) one representative of the Council of State

and (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 allocations.

265. The main functions of the central medical research organisation proposed above should be (1) the formulation of policy in regard to the future development of medical research in India, (2) stimulation of research activities in the provinces, universities and medical colleges and (3) co-ordination of such research activities throughout the country.

266. Our recommendations deal also with future developments in respect of Government research institutes and teaching institutions. In addition we have suggested the provision of improved laboratory services in the different provinces through the creation of regional laboratories, to be linked locally with other organisations in connection with the health programme and, for technical direction, with the central laboratory at the headquarters of the province. We have also made suggestions regarding the development of research in special subjects such as malaria and nutrition. Investigation into the social and environmental factors affecting health and disease has also been suggested. For information regarding these matters reference should be made to Chapter XIX of Volume II of our report.

The Recruitment and Training of Medical Research Workers

267. The number of suitable medical research workers and facilities for training them are inadequate at present in India and, before any expansion of medical research on a reasonable scale can be undertaken, the primary requirement will be a great increase in the number of properly trained workers. Responsibility for recruiting medical research workers and for the creation of training centres for them must be the primary function of the central organisation for medical research referred to above and we have made certain specific recommendations in this behalf also.

The Manufacture of Biological Products

268. One of the activities of Government laboratories is the manufacture of biological products such as vaccines and sera, mainly for the use of Public Health Departments. While recognising that the preparation of these products by commercial firms in India is an industry which is now well established and has been making rapid progress, the majority of us consider that the large scale production of basic prophylactics such as cholera, plague, TAB vaccines, vaccine lymph and anti-rabic vaccine is of paramount importance to the public health authorities in India in protecting the people against epidemics and that their production should therefore remain a Government responsibility.*

*Drs. Vishwa Nath 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. Their views are expressed in a note on medical research, which has been appended to Chapter XIX of Volume II of the report.

ALL-INDIA MEDICAL INSTITUTE

269. Our recommendations in the section dealing with professional education are intended to promote the production of health personnel under the different categories, in as large numbers and as rapidly as possible. 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 in suitable centres in different parts of the country. In the first place we recommend the establishment of one such training 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 very highest order for the training of all the more important types of health personnel and to emphasise the close interrelation which exists 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 co-ordinate 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; (5) to inspire all persons who undergo training, undergraduate or postgraduate, with the high ideals of the profession to which they belong and (6) 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 field 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.

We recommend that the Central Government should be responsible for its establishment and maintenance.

The Range of the Institute's Activity

270. 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 the higher types of health workers.

The Selection of Students

271. The students to be admitted to the medical and nursing colleges attached to the Institute should be selected very carefully, merit being the sole criterion for admission. As the needs of the country as a whole are to be served, applicants from all parts of India should be eligible for admission.

Organisation and Control

272. The organisation and control of the Institute should cover (1) the administrative field and (2) the technical and scientific field.

The administrative field.—An institution of the type we envisage should have freedom to develop its own activities independently and without the delaying and hampering effect that strict governmental control may entail. We therefore propose that its administration

should be vested, from the time of its inauguration, in a Governing Body of suitable composition.

The technical and scientific field.—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 the latter themselves acting as a medical faculty. 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 understand that this system generally prevails in the United States.

Recruitment of the Staff

273. Our recommendations in connection with the recruitment of the health services, which have been set out earlier, apply generally to the recruitment of the staff of the Institute also. As regards procedure, however, a departure seems desirable from our suggestion that recruitment to the different health services should be made through the various Public Service Commissions. We feel that the adoption of the procedure, which has been practised 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, it is understood that 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 the Medical Faculty the recommending body.

Finance

274. We consider that the Central Government should fulfil adequately the responsibility of financing the Institute on a sufficiently generous scale to promote its development into, and maintenance as, an all-India training centre on the lines indicated by us. An appeal should, however, be made to the public for contributions. The Institute is of such paramount importance for the full development of the proposed national health programme 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.*

HEALTH ORGANISATION FOR DELHI PROVINCE

275. The Central Government should attempt to demonstrate in Delhi Province the effects of implementing not only our proposals

*Mr. P. N. Saprú and Dr. Hameed do not agree with the rest of the Committee on a few points. Their note is appended to chapter XX of volume II of the report.

but also those put forward by other committees, which have made recommendations for postwar development in different fields of community life. The purpose in view is to demonstrate to the country as a whole what can be achieved, through co-ordinated effort, to improve the health and general prosperity of the community.

Our Proposals

276. While our proposals for the health organisation in Delhi Province follow the main outlines of the general plan suggested for the country as a whole, there are modifications in certain directions. These are designed to secure a higher level of efficiency in the proposed health service, in view of Delhi being a demonstration centre for the country as a whole. For instance, a rural primary unit in this province will have only a population of 20,000 as against double that number which has been suggested for the rest of the country. The proposed provision for medical relief will be higher in Delhi Province than that suggested by us in other provinces. The dispensary at the headquarters of the primary unit will have five emergency beds as against two elsewhere, while the 30-bed hospital will serve in Delhi a population of 60,000 as against 160,000 in the rest of the country. In view of the limited number of women doctors available in India, our proposals for the appointment of a woman doctor to each primary unit may not be possible of being carried out in the country as a whole in the early stages of the programme. It should, however, be possible for Delhi Province to secure women doctors for the relatively smaller number of such units which will be developed here. In proportion to the population Delhi will have double the number of midwives and trained *dais* in each primary unit as compared with the rest of the country. Thus health work among women and children should be capable of development here on a more effective basis than in the other provinces.

DRUGS AND MEDICAL REQUISITES

Supplies

277. Second in importance only to the provision of trained health personnel must come the supply of the therapeutic substances and medical appliances without which doctors and public health workers generally may be reduced to a stage of virtual impotency 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. Even when they are available, the cost in respect of some is so high as to prohibit or at least gravely restrict their use. Quinine may be cited as an example. We are told that, in the year 1935-36, the actual cost of producing quinine in Bengal from home grown bark was about Rs. 6/8/- a pound, while the Government selling price of this article was Rs. 18 and the market rate Rs. 22 a pound. This market rate was largely decided by an international organisation, Kina Bureau, which controlled about 95 per cent. of world's supply of quinine. Nor can the indigenous profiteer be absolved from the charge of criminal exploitation. We feel that such a state of affairs should not be permitted to continue and that it calls for immediate attention and remedy.

278. We recommend 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 it 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?

279. 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. The final responsibility should 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.

Control

280. The Drugs Act of 1940, which was 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. The provisions of this Act and the rules made under it should be brought into operation throughout the country and rigidly enforced with the least practicable delay.

INDIGENOUS SYSTEMS OF MEDICINE

281. We are unfortunately not in a position to assess the real value of these systems of medical treatment as practised 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, 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 organisation, is not within the purview of the indigenous systems of medical treatment as they obtain at present. The indigenous systems of medical treatment do not also at present deal with such vital

aspects of medicine as obstetrics, gynaecology, advanced surgery and some of the specialities. Further, 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 ministrations to those who seek its aid.

282. 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.

283. 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 recognised. We were further told by Dr. Ognev, the Soviet Representative, that indigenous systems of medical treatment were nowhere recognised in the Soviet Union.

284. We consider that it should be left to the Provincial Governments to decide what part, if any, should be played by the indigenous systems in the organisation 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 utilise them in their schemes of medical relief.

What we have said in regard to the indigenous systems applies generally to Homeopathy also.*

REGULATION OF THE MEDICAL, DENTAL, NURSING AND PHARMACEUTICAL PROFESSIONS

Regulation of the Medical Profession

285. 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. 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 and which has been vested with the duty of securing the maintenance of the requisite standards of proficiency from candidates at the qualifying examinations for entry into the Medical Register. In India the Indian Medical Council, which was established by the Medical Council Act of 1933, has not been authorised to maintain an all-India Medical Register. 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 and 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

*Drs. Butt, Vishwa Nath and Narayanrao do not accept this view. They desire to see that the services of persons trained in the indigenous systems of medicine are freely utilised for developing medical relief and public health work in the country.

Indian universities and which are incorporated in the First Schedule of the Indian Medical Council Act.

286. We consider this position unsatisfactory. We are recommending that, for the future, there should be only 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 accepted. In the 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.*

287. The need for restricting the right to prescribe drugs in the British Pharmacopoea and to practise scientific medicine by unqualified and unregistered personnel was emphasised in our discussions. In this connection we considered the desirability of enacting legislation providing (1) that no medical practitioner should be entitled to affix the designation "doctor" before his name unless he is a registered medical practitioner in modern scientific medicine, (2) that no person should be entitled to prescribe drugs in the British Pharmacopoea, especially injections and poisonous preparations, unless he is a registered practitioner and (3) that those who practise Unani or Ayurvedic systems of medicine should style themselves as "Hakims" or "Vaid" as the case may be.

288. We consider that the public is entitled to know the exact credentials of persons on whom they call for advice and treatment and to protection against fraudulent imposition. We suggest that legislation should be made so as to 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 recognised by the State or (b) are practitioners qualified to practise modern scientific medicine.

289. 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.

290. The terms "Hakim" and "Vaid" are honourable titles of considerable antiquity and it is by no means clear to us why persons entitled to use these honourable appellations should desire to assume any other. We do not feel competent to make any recommendations regarding the organisation and regulation of indigenous systems of medicine. We therefore confine ourselves to the recommendation that Provincial Governments, if they desire to recognise these systems, might with profit follow the example of the Government of Bombay and enact legislation by which all persons practising any form of the healing art are compelled to secure registration in a

*Drs. Vishwa Nath and Butt are not in agreement with this recommendation and their note will be found appended to Chapter XXIV of Volume II of the report. They suggest the maintenance of the existing position in respect of all these Councils.

schedule or schedules appropriate to the system in vogue and their qualifications in such system.

The Dental Profession

291. The profession of dentistry is, as yet, totally unorganised in India and no legal provision exists for its regulation. We recommend that legislation should be undertaken in order to create Central and Provincial Dental Councils. The latter should be charged with the duty of recognising training institutions and of creating and maintaining Dental Registers as well as with the disciplinary regulation of the profession, subject to appeal. The Central Dental Council should 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 training institutions, 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.

Regulation of the Nursing Profession, including those of Midwives and Health Visitors

292. At present the regulation of the nursing profession, which includes those of midwives and health visitors, is vested in Provincial Nursing Councils which maintain registers of persons who have completed approved courses of training in institutions recognised by them for the purpose and have passed the prescribed examinations. Persons so registered are entitled to practise the profession in their own province. Arrangements for reciprocity with other provinces exist to a degree which varies with the Nursing Council concerned.

293. We recommend the creation of 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. Questions of reciprocity within and outside India should be the concern of this Central Nursing Council. We recommend the maintenance of an All-India Register by this Council, with separate schedules for the entry of approved qualifications in general nursing, higher nursing, public health nursing, midwifery and health visiting.*

294. The power to take disciplinary action should continue, in the first instance, to be vested, as at present, in the Provincial Councils, but 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, an appeal lies to the High Court against the decision of the General Nursing Council.

Regulation of the Pharmaceutical Profession

295. For the regulation of the pharmaceutical profession we recommend the creation, as in the case of the nursing and other professions referred to above, of Central and Provincial Pharmaceutical Councils with functions which are similar to those indicated in respect of the corresponding Councils for those professions.

*Our suggestions for the composition of the Central Nursing Council are given in Appendix 50 of Volume III of the report.

EMPLOYMENT OF DEMOBILISED PERSONNEL OF THE MILITARY HEALTH SERVICES

296. During the present war the Indian Army has expanded more than ten times its peace strength and, as a corollary, the military health and nursing services have undergone a considerable expansion. 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, which have greatly increased the professional and technical value of the personnel concerned. 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, Nurses and Technicians. We have given in Chapter XXV of Volume II a short description of each category and the civil employment for which individuals in that category would appear to be suitable.*

297. We would emphasise the supreme importance of this reservoir of trained talent being made 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 programme for the country which we contemplate. We therefore consider it essential that the services of all such personnel should be utilised, except in cases of proved unsuitability.†

THE ESTABLISHMENT OF A COMMITTEE OF STANDARDS FOR MEDICAL INSTITUTIONS AND EQUIPMENT

298. In view of the heavy constructional programme which will have to be formulated to supply the new accommodation required under our proposals, to carry out the structural alterations necessary in respect of existing buildings and to provide the vast number of fittings of all kinds required by laboratories, health centres, 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. We urge the setting up of a Committee of standards for Medical Institutions and Equipment and suggest that it should be closely linked with the appropriate section in the Central Ministry of Health. Its composition should include:—

(1) architects with experience of designing and construction of medical institutions under tropical conditions;

(2) engineers with similar experience;

*We have also given in a tabular statement (Appendix 53 of Volume III of our report) for which we are indebted to the Resettlement Section of the Office of the Director General, Indian Medical Service, detailed information regarding demobilised personnel.

†Drs. Vishwa Nath and Butt, Sir Frederick James and Lieut.-General J. B. Hance desire to lay further emphasis on the remobilisation, for civil purposes, of demobilised medical and ancillary personnel and their separate note will be found at the end of Chapter XXV of Volume II of the report.

(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.

299. We recommend that the Committee should, among other things, 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.

RE-EMPLOYMENT OF PERSONS WHO HAVE REACHED THE AGE OF SUPERANNUATION

300. 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 some cases, the entire absence of certain classes of professional and technical workers. The need for trained personnel is so clamant as to make the rigid maintenance of the normal rule that Government servants should be superannuated at the age of 55 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. Subject to physical and mental fitness persons who have reached the age of superannuation should be permitted to continue to work on a year to year basis, on the condition that they are found fit by the medical board on each occasion. In order to ensure that the continuation in service of such persons does not stand in the way of normal promotions in the health services, they should be made to retire before they are re-employed.

These recommendations of ours should apply to all members of the health services.

THE POPULATION PROBLEM

301. The steady growth of population, which has taken place 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.

302. The three main factors which influence the growth of population are (1) migration, (2) mortality and (3) fertility.

Migration

303. Owing to the restrictions which the Governments of other countries have placed on the entry of Indians into their territories, the effect of migration on India's population has been negligible for some time past and is likely to be so, at least for some time longer.

Mortality

304. During the past two decades there has been a steady fall in the mortality rate of the country. A further fall is bound to

occur if the large scale programmes for improving the health of the community advocated by the different postwar planning committees are effectively put into operation. 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 5 millions. An annual saving of 3 millions in British India as the result of improved health conditions will raise India's rate of growth to 8 millions 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

305. All available information seems to suggest that the fall in the fertility rate in India during the past 60 years has been negligible compared with the fall in mortality. In this connection certain estimates of the rates of fertility and mortality for the country are quoted from an interesting study of India's population problem by Kingsley Davis, under the title of "Demographic Fact and Policy in India," published in the Milbank Memorial Quarterly (July 1944).

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

306. It seems 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.

Our Recommendations

307. 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. Growth of population may be prevented from becoming a menace to the standard of life of the community (a) by migration, (b) by increasing the production of natural resources and (c) by a reduction in the rate of

additions to the population. 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.

Increased Production

308. 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. Such measures, however, 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

309. Our social instincts militate against a reduction in the rate of growth of population being brought about by permitting the death rate in the community to rise. We have therefore to turn to three other means for decreasing the rate of growth, namely, (1) a raising of the age of marriage for girls, (2) an improvement in the standard of life and (3) intentional limitation of families.

310. *Raising of the age of marriage for girls.*—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. There are also strong physiological reasons for raising the minimum age for the marriage of girls to 16, 17 or even 18. We refrain, however, from making a specific recommendation, partly because we are not unanimous on the point and partly because 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.

311. *Improvement in the standard of living.*—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 limit 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. Such rise must however be a slow process and, while this development goes on, it seems likely that the active measures introduced by the proposed health services will result in an appreciable reduction of the death rate and thus, produce a temporary acceleration of the rate of growth of population.

* 312. *Intentional limitation of families.*—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.

While 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, the large majority of mankind, although able to convert a part of their sexual impulse into activities useful to the community, may still have to find satisfaction in the sexual act itself. In the circumstances we seem to be left with birth control through positive means as the only method which is likely to be effective.

The Extent to which the State should help to promote the Birth Control Movement

313. All of us are agreed that, when childbearing 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 centres, 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.

314. 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.

The Extent to which the proposed Measures are likely to Restrict the Growth of Population

315. For various reasons, which include the inadequacy of medical women and of health visitors to impart birth control knowledge to the women of the country, the enormous cost of making a safe and effective contraceptive available to the people, the inability of the majority of women to learn and practice contraception satisfactorily and the disfavour with which certain communities look on birth control for religious reasons, we believe that a rapid extension of the practice of contraception among the people is unlikely in the immediate future. It also appears to us that there is little immediate prospect of raising the age of marriage for girls by legal enforcement. 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 an acceleration as compared with the past. While recognising 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 will permit.

Genetics and Population Policy

316. 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. As regards man, however, the extent of our knowledge regarding the hereditary transmission of disease and defect is at present very limited and, with the existing knowledge, it would be difficult to formulate and execute an effective population policy directed to promote the creation of a healthy and well-endowed community. We therefore consider it desirable that, as a part of the study of the population problem in India, the part which heredity and environment play in the transmission of valuable human traits and of defects should be investigated.

Study of the Population Problem

317. It is 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. We desire to see such studies organised and conducted on as broad a basis of collaboration as possible and suggest that 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 the Universities, wherever they exist, should participate in such studies.

ALCOHOL IN RELATION TO HEALTH

318. Drinking has, as pointed out by Professor Sigerist in his book "Civilisation 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 litres 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 was 4.5 litres in 1931, 3.7 in 1935..... Another cause of harmful drinking is to be sought in folk customs and group habits. Since alcohol removes inhibitions and makes people talk more freely, it became the custom to drink alcoholic liquors whenever people gathered for social intercourse. This *alcoholisme mondain*, as the French call it, affects the most highly educated 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 co-operation secured for its effective control only through education.

Education regarding the Fundamental Facts in relation to Alcohol

319. 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. Proper text-books on the subject should be prepared by some central agency and 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 colour to the different subjects that are discussed.

Certain Other Suggestions for Combating Alcoholism and for Restricting Alcohol Consumption to the Minimum

320. We recommend the strict control of existing liquor shops and the severe restriction or even prohibition of opening 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 the 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. There should also 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 craving 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.

321. Provincial Governments obtain today, a substantial part of their revenues from alcohol. "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 designed 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

322. 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 behaviour resulting from drunkenness is an equally important matter. 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. 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 religious leaders should take an active part.

323. 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 aeroplanes 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. 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 during working hours appears therefore to be of advantage from the point of industry and of workers alike.

THE INSTITUTION OF A MEDICAL LIBRARY SERVICE

324. 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 medicine is concerned. India is at a great distance from other centres of scientific thought and she must inevitably draw her knowledge of advances and discoveries from books and journals published in other countries. She must be largely self-contained and the 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.

325. India has not the funds to enable her at present to institute a library comparable with the more important 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.

326. In order to put the proposed library service on a sure foundation, an exploratory survey of the facilities existing in the United Kingdom, the United States and elsewhere should be undertaken by one or two officers (of whom at least one should be an Indian) deputed for the purpose.

327. There should be, in London, a correspondent to the library who will watch its interests in the West and act as the channel both of information and of supply in matters concerned with the library service.

328. The Central Library we envisage is one chiefly devoted to research and should be established in association with the All-India Medical Institute. 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. We prefer, however, to leave that question, together with the 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.

LEGISLATION

329. 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 establishment of the All-India Medical Institute, the Central Committee for Postgraduate Medical Education and Central and Provincial Water and Drainage Boards.

Consolidated Public Health Acts, Central and Provincial

330. In addition we recommend the enactment or consolidated public health Acts by the Central and Provincial Legislatures. 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.

331. Such legislation at the Centre and in the Provinces may take some time to materialise. 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.

THE FINANCIAL IMPLICATIONS OF THE PROGRAMME

332. 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 fulfilment and on the other halting and inadequate schemes which could have no effect on general health standards and which would bring little return for the expenditure involved". We decided that our guiding principle should be that the short-term plan must produce 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. The consequences of such failure might even be a set-back, for many years to come, in the development of health administration in the country.

333. 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 Re. 0-1-7 in Bihar, Re. 0-1-9 in the United Provinces, Re. 0-2-7 in Bengal. The highest figure for such expenditure was Re. 0-5-9 in the province of Bombay. In order to ascertain what an improved health service is likely to cost it may not be out of place to examine the corresponding expenditure for certain other countries, 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. The expenditure incurred by a country on its health services must necessarily depend on its national income and India compares, in this respect, very unfavourably with the two countries mentioned above. Certain estimates of national income for these three countries from sources to which we may reasonably attach value are quoted below:—

Country	Income <i>per capita</i>			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, 1940, page 517.
United States	1,371	7	3	Monthly Labour Review, Vol. 53, 1941, page 114.

334. The *per capita* income of the United States is about 22 times 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 organisation of health services in Chapter II of Volume II of our report it will be seen that the authori-

ties in those countries are dissatisfied with the provision for the health protection of their people and that expenditure on a generous scale to augment the existing services is under active consideration. In these circumstances, if India desired to develop a modern health organisation, 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.

The Estimates of Cost

335. 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	Second five years	First ten years
	Rs.	Rs.	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	100,62,00,000
	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
5. 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
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	15,08,00,000	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	28,39,00,000
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.	25,76,00,000	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

336. 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 services in India should be about Rs. 3-3-0 per head of the population in order to reach the level of similar expenditure in Great Britain in 1934-35, and about Rs. 2-5-0 to reach that of the United States in 1938. Our proposals involve, during the first ten years of their execution, an anticipated expenditure of Rs. 1-14-0 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 is 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

337. We realise, 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 budgeting 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 <i>per capita</i> 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	4·5
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	5·9
Sind . . .	8·2	2·5

338. While a small number of items of existing expenditure in the provinces on health administration will fall within the cost of the scheme, 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 meagre scale.

339. 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, constitute but a very small fraction of their total annual expenditure, the percentage ranging from 2.5 to 7.8. 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. Governments 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 12½ 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.

340. 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 per cent. 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. 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.

341. An enquiry into building methods and costs, with special reference to the Central and Provincial Public Works Departments in India would 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

342. 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 organisation 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 organisation 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. 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 co-ordinated 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.

J. W. BHORE, *Chairman.*

F. E. JAMES,

VISHWA NATH,

B. SHIVA RAO,

*Members of the Sub-Committee appointed
by the Health Survey and Development
Committee to prepare the summary.*

K. C. K. E. RAJA, *Secretary.*

NEW DELHI.

The 13th January 1946.

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