INDIAN SECTION.

Methods of Campaign against Leprosy in India.

(ABRIDGED.)

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IT is proposed to review briefly in this paper the principal methods which have been adopted in India during the last few years to deal with leprosy, to enquire to what extent these methods have met with success and to make suggestions for the future development of anti-leprosy work in India.

These methods have been found effective in India and have to a certain extent been used in modified forms as a basis for campaigns against leprosy in other countries. I, therefore, consider that this is a useful subject to put before a conference such as this, as it is held in a place where leprosy is highly endemic and is attended by delegates from other countries where leprosy is common.

The initiation of an active campaign against leprosy in India was due largely to the initiative, labour and foresight of Sir Leonard Rogers. During the few years prior to his leaving India in 1920 he did much work and published several papers on the treatment of leprosy. In founding the Calcutta School of Tropical Medicine and Hygiene he arranged that leprosy should be one of the subjects of research. This research has continued for the last ten years under the joint support of the Endowment Fund of the School and the Indian Research Fund Association, with the co-operation since 1926 of the Indian Council of the British Empire Leprosy Relief Association.

For a period of 50 years, between 1874 and 1924, the leading anti-leprosy work in India was carried out by the Mission to Lepers which had organised no fewer than 41 leprosy asylums throughout India and gave support to other ten institutions. These asylums fulfilled an excellent function in segregating some 5,000 lepers and in offering a retreat especially for those who had reached the more advanced and crippling stages of the disease. In them forcible segregation was not resorted to. There were also 41 government, municipal and other asylums almost entirely used as refuges for those who had been cast out by their relatives, and for the forcible segregation of those who made a living by

exhibiting ungainly trophic ulcers in the streets with the hopes of exciting the pity of alms-givers. In all there was accommodation for less than 9,000 inmates.

In 1920, the Mission to Lepers held a conference in Calcutta which was attended by their agents and also by Sir Leonard Rogers and others interested in anti-leprosy work. This conference excited a considerable amount of interest and was of considerable value in promoting the campaign against leprosy which followed. It also resulted in the adoption of methods of treatment of leprosy in many of the leper asylums where measures had not been previously attempted.

Due again chiefly to the initiative and enthusiasm of Sir Leonard Rogers and to the organising ability of Mr. Frank Oldrieve, the British Empire Leprosy Relief Association was formed in London in 1923, its objects being to rid the British Empire of leprosy. In 1924, Mr. Frank Oldrieve as Secretary of this Association, came to India and visited the various provinces, stirring up considerable interest in the anti-leprosy campaign. In January, 1925, the Viceroy, Lord Reading, issued an appeal which was as follows :—

> " I make an appeal to-day to India on behalf of the Leprosy Relief Association. I am confident that the object of my appeal cannot fail to commend itself to the sympathy both of the rich and the poor and to all classes and creeds without distinction in India. None, I feel, can be insensible to the terrible sufferings of those afflicted by this disease, or blind to the danger of the spread of this dreadful malady already so widely diffused in India. I have convinced myself by personal observation that wonderful work is already being done in India on behalf of lepers and for the prevention and cure of the disease. The methods of treatment hold out great hope of alleviation and even of cure ; but the work is limited in scope because it is cramped for want of funds. Contributions are urgently needed for the extension and support of institutions for the treatment of lepers and for further research connected with the disease.
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> " I ask all classes to join me now in an earnest campaign to combat this dreadful disease. In the name of humanity I appeal to all thoughtful and sympathetic men and women in India to help this labour of mercy and to contribute funds for the consummation of this noble purpose."

Some 22 lacs of rupees were raised as the result of this appeal, and an Indian Council of the British Empire Leprosy Relief Association was formed in Delhi. After careful consideration the following memorandum was issued by the Executive of the Indian Council :—

"The main object of the Indian Branch of the British Empire Leprosy Relief Association is the eradication of leprosy from India. It was formerly thought by many that leprosy was confined to the comparatively few pauper lepers who beg for alms at the street corners, and that the only danger to the public lay in contact with these people. It is known that pauper lepers form only a very small fraction of the leper population and that the disease is common among all classes of the community. This is well illustrated by the following figures which give the occupations of the 950 out-patients who have attended the leprosy dispensary at the School of Tropical Medicine in Calcutta :—

Occupations.	*No. of cases attended.*
Servants	208
Merchants and shop-keepers ...	103
Clerks	155
Students	91
Professional men	226
Mechanics, etc.	50
Washermen and barbers ...	46
Food-sellers, milk-sellers, etc. ...	29
House-wives	29
Land-owners	13
TOTAL ...	950

"The pauper lepers were, many of them, respectable citizens until they were outcasted by their disease and driven to seek their livelihood by begging.

"It was formerly considered that the most appropriate method of dealing with lepers was to seek to segregate them forcibly in leper asylums and other institutions. But a brief glance at the extent and nature of the disease in India will show that any attempt to abolish leprosy in this country by such means is not likely to meet with success.

"While the number of lepers in India given in the 1921 Census is only a little over 100,000 there is good

reason to believe that the number is 5 or more likely 10 times that number. Lepers are often unaware that they are suffering from leprosy and even when they are aware of the facts they often do their best to hide their misfortune, because of their fear of social ostracism or loss of employment. Only the most obvious cases find their way into the Census figures.

" Figures collected by Col. Megaw, Director of the School of Tropical Medicine, Calcutta, from civil surgeons regarding the prevalence of leprosy in the jail population, indicate that nearly 1 per cent. of the prisoners in India suffer from leprosy. Making all allowances for the fact that the incidence of the disease in the whole community may be less than these, it is likely that about 4 or 5 per 1,000 of the population suffer from the disease. These figures, therefore, indicate that at least one million people in India suffer from leprosy.

" If we take it then that there are a million lepers in India, which is not an exaggerated figure, it is easily seen that segregation of all could not possibly be carried out for the following reasons :—

" (1) Financially it would be impossible.

" (2) Any attempt to impose forcible segregation would drive patients, particularly those who are suffering from the earlier stages of the disease, to hide themselves, and as has been the case where such means have been adopted, only the more advanced and obvious lepers could be segregated.

" (3) The majority of the obvious lepers, who would form the bulk of the population of homes and asylums, are not highly infectious, and little would be gained by the segregation of such cases in preventing the spread of the disease, while little would be done for the cases most susceptible of treatment.

" Leprosy may almost always be diagnosed by clinical signs before it becomes infectious, and at that early stage it can be controlled by treatment at out-patient dispensaries, so that such early cases do not pass on into the infectious stage, but soon lose all active signs of the disease and remain symptom-free provided their general health is maintained. In this way (*a*) patients are induced to come forward at an early stage in the hope of recovery instead of hiding their malady till it becomes more advanced, more infectious and less remediable ; (*b*) thus the source of infection may be

shut off, as the number of infectious cases will continually tend to diminish, and the opportunities for infecting the next generation become fewer.

"It is then along the lines of establishing dispensaries for the treatment of all cases, but especially of early cases, that the strongest hope lies for stamping out the disease.

"The Indian Branch of the British Empire Leprosy Relief Association has put research in the first place and the training of doctors in the second place in its programme. These items, the expenditure of which is for the present being met from the Central Fund, are necessary if there is to be efficient treatment and the supply of efficient doctors to carry it out. The third item is the establishment of dispensaries for the treatment of leprosy without which the effect of the first two will be nullified. The money disbursed from the Central Fund to the provinces should be spent in such a way that efficient treatment centres may be established.

"In some cases the money may be spent directly on the establishment of such centres, in others it may be spent in employing a medical officer who shall be the expert for the province and who shall, after due training, set about establishing dispensaries and training doctors for running them.

"The fourth item is general propaganda, and for this purpose literature, charts, lantern slides and films are being prepared and will soon be available.

"In thus indicating the lines which Provincial Committees should follow in administering the funds at their disposal, the Indian Council has no intention or desire to minimise the usefulness of homes and asylums for the care of lepers. Such institutions have done in the past and are still doing most useful work in the interests of suffering humanity. In the speech with which His Excellency the Viceroy inaugurated the Indian Branch of the British Empire Leprosy Relief Association, he indicated the provision of assistance to such institutions as one of the objects to which the income of the Fund for which he appealed might be devoted. Had the response, generous as it was, to His Excellency's appeal been greater, some of the income of the Fund might usefully have been spent in the manner indicated. But the Indian Council feels obliged to advise His Excellency that except in so far as aid can be given as indicated above, to provide

or improve dispensaries at existing institutions at which medical treatment can be administered, the Fund cannot afford to assist them. The provision of homes for lepers must be a matter for local enterprise and local charity and can probably be most effectively carried out by local authorities."

The four objects, which this new organisation set before it, were therefore Research, Training, the Formation of Leprosy Treatment Centres and Propaganda. A fifth object was adopted later, which has proved of great importance, *viz.*, Survey.

1.—*Research.*—It was felt that, as the result of research already carried out, sufficient knowledge had been gained to begin work upon new lines throughout India; that treatment was already effective enough to attract patients and produce good results when efficiently carried out; and that the knowledge already available should form the basis of wide-spread propaganda. Further research was, however, urgently needed to improve and extend our knowledge of the nature of leprosy and of the methods of treatment and prevention. For this reason prominence was given to research. It was felt that this could be most effectively promoted by appointing a first-class medical officer to work at the School of Tropical Medicine in co-operation with those already engaged in leprosy research there. In this way, while research might be carried out at various leper institutions throughout the country there would be a unit strong enough and well enough equipped to take the lead and make distinct advances possible.

2.—*Training of doctors.*—Until within a few years of the forming of the Association leprosy had been looked upon as an incurable infirmity, rather than as a disease. Few doctors could diagnose any but the most obvious and far advanced cases and they knew still less about its treatment. Ignorance of the nature of leprosy and of the ways in which infection is spread had led also to dread of the disease, and few doctors were willing to undertake its treatment for fear of contracting the disease themselves.

In the report of the Indian Council of the Association for 1925, the following two statements are made :—

(1) That leprosy, as it is found in India, is capable of easy diagnosis by clinical signs in its early stages, and that patients, whose disease is diagnosed early and who undergo efficient treatment for a sufficient period under reasonably favourable circumstances, have every hope of recovery;

and, unless at any future time their general health is lowered they can look forward to continued freedom from all signs of the disease.

(2) That any treatment for leprosy will not go very far unless it puts in the forefront the necessity of raising and maintaining the general resistance of the body both by avoiding other debilitating diseases and by due attention to exercise, diet and climatic and hygienic conditions.

It was felt that if doctors were to learn how to diagnose, treat and prevent leprosy efficiently, the circulation of literature would not be enough. Thorough training under those who have considerable experience is essential if doctors are to deal with leprosy competently.

Four courses in leprosy have therefore been carried out annually for the last few years at the Calcutta School of Tropical Medicine, each course lasting two weeks and being attended by some 20 to 30 doctors, most of them sent by provincial Governments and States at the expense of the Leprosy Association. Obviously few of the thousands of doctors of India could be trained in this way, but many of those trained are themselves giving special courses, and in consequence many hundreds of doctors are undergoing training. Recently arrangements have been or are being made to have a course of six lectures on leprosy given in all medical colleges and schools throughout India to final year medical students.

It is felt that once the true nature of leprosy has been recognised by the medical profession in India, a very considerable step will have been taken towards its eradication.

The remaining three objects of the Association may best be dealt with together. They are *propaganda, initiation of treatment centres and survey.*

Branches of the Association were formed in most of the provinces and states of India but in only a few of these was any effective work undertaken. Many of them did not realise that leprosy was at all a serious problem and were also at a loss to know how to organise a provincial anti-leprosy campaign.

A survey party consisting of a specially selected doctor, who had had several years' experience of anti-leprosy work, and four assistants, was therefore appointed and sent to carry out sample leprosy surveys throughout India, spending about four months in each province. The object of this party was not to make a full survey of leprosy in India; at least 70 such parties would have been necessary to do

this within a reasonable time. But its objects were as follows :—

(*a*) To demonstrate the frequency of leprosy.
(*b*) To find out if leprosy was more common in certain areas and among certain communities than among others ; and, if so, to ascertain the causes of such increased frequency.
(*c*) To initiate model leprosy clinics and train doctors to carry them on when the survey party passed on to another province.

In short, the objects of the survey party were to demonstrate in each province visited the need of an active anti-leprosy campaign and to demonstrate methods of carrying it out.

Except in one or two places this plan has worked out satisfactorily. In 4 out of the 10 provinces and states visited, *viz.*, Bengal, Bihar and Orissa, the Central Provinces and Travancore, similar survey parties have been started. In Madras a special leprosy officer for the province has been appointed, and several of the districts have appointed special whole-time leprosy doctors for work in their own areas. The United Provinces, the Punjab and Burma are appointing specially trained doctors to organise anti-leprosy work in these provinces.

The methods of the survey party may be mentioned briefly. A suitable thana or police area in a highly leprous district is chosen and headquarters are established at the centre of this thana. Villages are visited and, with the help of the village authorities, leprous cases are sought out. Lantern lectures are delivered at night explaining the nature of the disease and the means which should be taken for its prevention. A treatment centre is started and held twice a week, the rest of the time being used to complete the survey by house to house visiting. In some of the centres as many as 200 patients had begun to attend within a fortnight and further survey was rendered easy by the help of the grateful patients who welcomed the doctors to their villages and gave them all help possible. Thus, not only was a census of leprosy taken, but incidentally treatment centres were initiated and a large amount of propaganda work was carried on. Doctors from the neighbouring villages have also been found to attend and in one place the civil surgeon brought a number of his medical officers to attend the clinics and learn the methods of diagnosis and treatment.

It is generally found that the survey of one thana occupies one month and when the survey officers pass on to another place the district authorities supply a doctor who had been trained in leprosy work to carry on the clinic. A list of lepers in various villages is supplied to this doctor and he is able to supplement the survey by noting down the names of new patients who appear for treatment.

This way of carrying on a campaign against leprosy is generally known as the Propaganda-Treatment-Survey or, for short, the P.T.S. method. Apart altogether from its value in training doctors and initiating permanent and practical interest in leprosy work, it has brought to light many interesting facts with regard to leprosy as it is found in India, facts which doubtless apply to a greater or less extent to leprosy in other countries.

A few of the more important facts are recorded here :—

1.—*Among semi-aboriginals.*—Leprosy like yaws and tuberculosis belongs to a certain stage in civilisation. In India we do not find leprosy among the aboriginals or among those who lead a tribal or nomadic life. Nor is it common *primarily* among the more highly civilised and educated classes. It is commonest among those who may be termed semi-aboriginals, those who are in the intermediate state between the aboriginal tribes and the more civilised people. Unfortunately the more easily adopted features of civilisation are often the less creditable, and are apt to be physically and morally dangerous when not counteracted and controlled by its less easily acquirable safeguards. The more or less harmless periodical drinking of home-brewed toddy prevalent among aboriginals is replaced by constant drinking of country distilled liquor among the semi-aboriginals. The strict marriage laws of the former are relaxed and venereal disease becomes common in consequence. The chiefly vegetarian diet regulated by wise tribal rules is wanting in the semi-aboriginal who tries to make up for deficiencies in his diet by eating offal and decomposed fish.

Where we get contact between the primitive and the more advanced, there, at the point of contact, we find leprosy. Thus when the aboriginal comes in contact with other castes we find this fact holds good. Villages may be divided into three kinds, those where a single tribe or caste lives by itself ; those in which there are two or more quarters with a different caste in each ; and those in which all the castes live together, their houses alongside one another. In the first kind there is least leprosy, in the third there is most.

That is to say the more mixing that takes place without the safeguard of modern sanitation the more likely is infection to occur.

Another illustration of this principle is shown when the aboriginal leaves his native hills and jungle and finds employment in commercial concerns such as tea gardens. Here his former isolation, which was one of his chief safeguards becomes impossible. The wise old rules of his tribe are relaxed and he falls a prey to various diseases regarding which he is ignorant of the means of prevention ; one of the principal of these diseases is leprosy.

The Ganges River flows from west to east, but, when it reaches the plains of Bengal it bends towards the south. In the angle of this bend is the plateau of Chota Nagpur. This plateau is inhabitated by various tribes of aboriginals. Santhals, Khols, etc., who are practically free from leprosy. But in the laterite slopes between the plateau and the plains, in the area between the aboriginals and the more " advanced " plain dwellers, we find an incidence of leprosy which is one of the highest in India, so that in the geographical as well as in the social and the industrial field the line of demarcation between the primitive and the more advanced marks the highest incidence of leprosy.

2.—Leprosy is also common among the depressed classes. By depressed classes I mean not only the so-called untouchables, but also those who suffer under depressing social customs and laws. In the western part of the United Provinces leprosy is uncommon. There the people own their own land and cultivate it themselves. They are a strong and comparatively healthy people. In the east of the United Provinces and in the neighbouring districts of Bihar the fields are cultivated to a large extent by those who are more or less in a state of serfdom, the land being owned by comparatively rich zemindars. As a consequence of this the diet of the people is defective. They feed on such poor food as lathyrus sativus. Among these people there is an amazingly high incidence of leprosy, though they live in fertile plains where famine is uncommon. The same holds good in Travancore where, in spite of the fertility of the land, the depressed classes are limited to a poor and unnutritious diet in consequence of the land laws.

3.—In *famine* areas leprosy is common. These areas are often those with laterite or black cotton soil, which because of its porosity dries up quickly if there is a break in the monsoons, the crops being destroyed in consequence. Such areas are found in the Bankura district and the eastern

and western divisions of the Central Provinces. Regions which are subject to occasional floods are also apt to be famine areas as in Orissa. In such areas leprosy is common, the general malnutrition lowering the resistance to the disease.

4.—The *diet* of the people has a very important bearing on the incidence of leprosy. I have already mentioned the faulty diet of semi-aboriginals, the insufficiently nourishing food among the depressed classes, and the fact that leprosy is common in famine areas. Among the rich, leprosy is not uncommon due to over-eating and self-indulgence. Among the very poor it is common because of malnutrition. Milk is scarce, due to the smallness of the cattle ; a whole village herd may not give more than two or three pints of milk in the day, and in many places there is no milk to be had at all during six months of the year. In other places vegetables are not available, due either to the infertility of the soil and the lack of moisture, or to the ignorance and lack of enterprise of the inhabitants. Food, because of its lack of taste and nourishment, is either eaten in a semi-decomposed condition or is fortified with chillies and other pungent spices to an extraordinary extent.

5.—*Predisposing Diseases*.—It is clear from what I have written above that leprosy is predisposed to by unsuitable food and noxious habits. To no less an extent are predisposing and accompanying diseases accountable for high incidence. Helminthic infections, malaria, syphilis and other endemic diseases affect the incidence of leprosy to a very pronounced extent.

The general debilitating effect of a warm, moist climate is also of importance.

6.—Recent surveys which have been carried out among labourers in industrial concerns have shown an incidence rising to as much as 6 or even 12 per cent., while a common average figure is round about 1 per cent. This high incidence is accounted for by the following factors :—

(*a*) Coolies are commonly recruited from semi-aboriginals among whom leprosy is common.

(*b*) Other healthy coolies tend to be infected by these.

(*c*) Absence of public opinion to regulate the habits of people who have been collected from various castes and religions ; hence promiscuousness and all its evils.

(*d*) The incidence among coolies working under regulated conditions is apparently high on account of the fact that they can be examined systematically, though in the villages of Orissa and other parts of India 2 or 3 per cent. would not be an exaggerated figure.

7.—Among school boys also leprosy has been found to be common. As examples the following may be mentioned : Out of 1,097 boys examined at Villupuram in the Madras Presidency no fewer than 41 (3.7 per cent.) were found to have leprosy. The general population of this same town showed 1.42 per cent., but it was impossible to subject the general inhabitants to as close an examination as the school boys. In East Godavari, 1,513 school boys were examined, showed 22 (1.5 per cent.) as suffering from leprosy, while 5 per cent. of the factory hands in the same town showed signs of the disease.

8.—The following are some of the factors which favour the spread of leprosy :—

(*a*) The semi-aboriginal and depressed classes acting as servants in the house of the higher castes often infect the children of their employers who have not recognised the fact that their servants are suffering from leprosy.

(*b*) The inhabitants of famine areas where leprosy is common often migrate in famine years to the surrounding more fertile areas. In this way leprosy is gradually being spread to areas formerly non-endemic.

(*c*) The railway train and more recently the motor bus are responsible for the spread of leprosy both because of contact in these vehicles, and because they encourage lepers to travel long distances when formerly they travelled on foot or in bullock carts. Some of the most infectious cases show so little outward signs of leprosy that they are unlikely to be recognised as lepers by those with whom they come in contact.

(*d*) Pilgrimage favours the spread of leprosy, as pilgrims are not particular as a rule about those they come in contact with, and the hardships of the journey tend often to lower the resistance to disease. Many of the famous shrines are surrounded by large numbers of lepers who doubtless spread the disease to other devotees.

(*e*) Among the patients whom we have treated in Calcutta are school-masters, students, merchants of all classes, servants, &c. In fact, very gruesome tales might be written about the histories of some of these, who were highly infectious cases. Many of them had held what amounted to strategic positions for the spread of leprosy.

(*f*) Market towns are often hot-beds of leprosy, and through them leprosy is spread to remote villages by those attending market.

(*g*) Marriage is another common source of infection. A frequent history is that a bride comes into a village or group

of villages where leprosy has been unknown. She has a leprous infection, but signs show only after the birth of the first child. From this one case scores of cases may develop within two or three decades in the village and in other surrounding villages.

(*h*) Leprosy is also known to have been spread by exiles of war, returned soldiers, freebooters, and others.

(*i*) Lastly the joint family system is responsible for the spread of leprosy. A house is built of sufficient size for a man and his family. But when this family grows up and the sons marry and three or four families have to be accommodated in the same space, we have the crowded conditions most favourable for the spread of infection. The writer found fourteen families under one roof, each family in a room six by eight feet in area. In one room the father and sons were lepers. It is easily imaginable how the disease could spread in such a community.

I have given the above short summary of leprosy survey work in India to show how many factors enter into the spread and continuance of this disease. I think it will be obvious from what I have said that any scheme which is to be effective must take cognisance of such factors as those I have mentioned. Survey and propaganda must take their place alongside of diagnosis and treatment. Also we cannot hope for the thorough eradication of leprosy until the people have been educated to a certain extent and till the standard of living has been raised. Treatment must be made available to all in clinics scattered all over the country; and these clinics must be conducted by doctors who have both skill and keenness. Patients must be followed up to their homes by doctors or voluntary workers and contacts must be examined. Propaganda work founded upon the results of local investigation is the best method of teaching the people how to prevent leprosy. The above and similar methods are, I am persuaded, the most suitable for India, and I trust that readers belonging to other countries will find in this paper hints which may be of practical value in carrying out anti-leprosy campaigns in other countries also.

This article was written for presentation at the Leonard Wood Memorial Conference held at Manila in January, 1931, and was prepared before the Report of that Conference was issued.—EDITOR.