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THE CONTROL OF LEPROSY* 7

THE CHARLES FRANKLIN CRAIG LECTURE OF THE AMERICAN
SOCIETY OF TROPICAL MEDICINE

BY ERNEST MUIR,
London, England

I have used the word "control" for I feel that it embodies the most important immediate objective that should be aimed at, and I wish to emphasize this fact. I might have spoken of *leprosy relief*. That is important. To bring mental and physical relief to the 5 or 6 million lepers at present in the world is a very high ideal. To found and maintain institutions where the maimed and ostracised leper will find shelter and medical care has for long been rightly considered one of the finest and most heroic forms of service that can be undertaken; but its value from the public health point of view is limited. It relieves the sufferers but does not control the disease.

I might have spoken of the *eradication of leprosy*. That is a result to be achieved in time; but the word savours of ruthlessness—compulsion—strictly enforced segregation laws. These, however, are not likely to succeed. Compulsion—at least when exercised from without—generally tends toward concealment, and leprosy in many of its highly infectious forms is not difficult to conceal. One patient was treated for three months at the Dermatological Department of the School of Tropical Medicine in Calcutta for seborrhoea and other skin diseases. At last it was found that he had anesthesia of the feet and he was suspected of leprosy. He was sent to me, and I confirmed the diagnosis but considered at first that he was just a slight case. However, upon routine examination we found masses of acid-fast bacilli in almost every part of the skin and nasal mucous membrane, which we exam-

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ined; in scrapings from the surface of the skin we found masses of Hansen's bacilli. It is obvious how dangerous such a case may be, and yet he was exceedingly difficult to recognize by clinical inspection. Concealment makes things worse, for an unseen danger is more to be feared than an open one. Control, then, is the most important immediate objective for the antileprosy worker.

I trust you will forgive some of the seemingly very elementary things that I am about to say. My justification is the fact that these elementary things have sometimes not been observed.

In order to bring about control of leprosy, three things are necessary: knowledge of the disease, a carefully planned program, and improvement of the people.

1. We require knowledge of the disease. Since the discovery of the *Bacillus leprae* by Hansen in 1872, research in leprosy has been intensified. Progress in our knowledge of leprosy has been rendered particularly difficult by repeated failure to culture the organism effectively outside the human body, and to produce progressive lesions in experimental animals. Nevertheless, we now know far more about the nature of the disease than we did a few years ago. More fruitful has been the epidemiological study and the investigation of the statistical, sociological and economic features which govern the incidence and the spread of the disease.

Recently I received a letter from the Director-General of the Inter-American Conference for the Prevention of Contagious Diseases, New York, stating that a news cutting from the *New York Times* had mentioned the fact that there had been an apparent increase of 1,700,000 lepers in the British Empire within the last twelve years and asking for more detailed information on this matter. It would be no exaggeration to state that the *known* incidence of leprosy has more than doubled itself within the last ten years. This is illustrated by our findings in India in the 1921 Census that a little over a hundred thousand cases of leprosy had been reported. These figures, however, were gathered by unskilled enumerators. A party of five doctors, expert in leprosy, checked up on these figures in various centers throughout India and found that the figures had to be multiplied by ten to include all cases recognized by the experts. It is thus no exaggeration to say that there are one million cases of leprosy in India.

Our knowledge of the treatment of leprosy has advanced con-

siderably within the last two decades. Doubtless exaggerated reports have from time to time appeared in the popular press, and even, I regret to say, in scientific journals, but we can at least say that leprosy is more amenable to treatment than tuberculosis. But the chief value of treatment in the control of leprosy, at least among the backward races, is when it is used as an adjunct to an educative and preventive campaign. By means of treatment the confidence of patients is won, and their follow up and the examination of contacts is rendered easy.

Our knowledge, then, of leprosy from all points of view has increased and is reaching a stage at which we can hope more effectively to control it.

Leprosy was once common in England. What was it that led to its control some four or five hundred years ago? There must have been various factors, but I believe that one of the most important was the translation of the Bible into English and the adoption of a modification of the levitical code in dealing with leprosy. The practice embodied in the funeral service held over the leper was one of the results; the leper was counted to be dead to the community and was strictly forbidden to engage in any trade which might spread infection or to mix with his fellows; and he was particularly forbidden to come in contact with children. Here we have new knowledge of the nature of leprosy made available by experts and put through effectively to the people; very imperfect it may have been, but it was sufficient, along with other factors, to control the disease; knowledge which was imparted and enforced by the then leaders of the people—that is to say, the Church.

In a recent visit to West Africa I investigated the ideas of the Chiefs and other intelligent natives with regard to leprosy. I found that some of them were surprisingly quick to recognize leprosy, and could distinguish it from yaws and other skin diseases often very similar in clinical appearances. They divided leprosy into three categories: the form that cuts off the fingers and toes, that which gives round patches, and that which gives thickening and nodules of the face and ears. I found, however, that they considered these three forms to be dangerous in the order given above. They thought that the deformed type, whose signs are most conspicuous, but in which the infection has more or less died out, is the most contagious; while they considered that the infectious nodular case is of very little danger. When asked regarding the danger to children, they said that young children did not often take leprosy

and so could safely mix with lepers; it was when they reach adolescence that they took leprosy, that the son became leprosy when the parent was reaching the deformed stage. They do not realize that infection takes place in early childhood, though it does not show signs until adolescence. Thus there were correct observations, but the conclusions drawn were incorrect. Such errors I have found likewise in India, and in both India and Africa it is generally the deformed and maimed, though comparatively harmless, secondary neural case that is driven out of the home, or is isolated outside the village.

Knowledge, therefore, is the first essential; it has to be gathered by the specialist and handed on to the physician, nurse and others who help in the campaign against leprosy. When it has reached the people themselves and become a part of their common knowledge, then leprosy control will be very much simplified.

2. A carefully planned program is necessary. This will necessarily vary in different countries and areas. It must be built upon the foundation of knowledge. Much devoted service and money has been wasted for want of this.

A thorough understanding is necessary not only of the disease itself but also of human nature and especially of the particular habits, customs, prejudices, economic and social conditions of the people among whom an anti-leprosy campaign is attempted. Norway is an outstanding example of a wisely planned antileprosy campaign. Those who could and would isolate themselves effectively in their own homes were allowed to do so subject to careful medical inspection. Those who failed to do this were placed in leprosaria. This was possible in an advanced and highly civilized country like Norway with a well-organized public health service. In China, India or Africa, the Norwegian methods could not apply.

In India there are about one million lepers, of whom probably about one-quarter (250,000) are potential spreaders of the disease. Our criterion for infectiousness is the ability to find Hansen's bacilli by routine examination of the skin and nasal mucosa. Even if there were sufficient leprosaria and these quarter million people could be persuaded to enter them, think of the huge expense in maintenance and caring for this vast army. Obviously, the main stress in large and backward populations must be laid upon a gradual educational program. If all the infectious cases knew the danger they are to the community and isolated themselves, or if the communities themselves knew the danger and in-

sisted upon isolation, then the problem might be solved. Personally, I have pondered this matter long and carefully, and I can see no other way besides that of a well-planned educational program.

In India in many places the propaganda—treatment—survey method (popularly known as P.T.S.) has been adopted. Treatment attracts patients to the clinic. From the clinic they are followed up to their villages and contacts are examined. Thus gradually a survey is completed, cases being divided according to whether they are infectious or non-infectious. The history of leprosy is worked out in each village, and this is used as "special propaganda" in persuading the villagers to take precautions against further spread, by isolating all infectious cases. It would be found perhaps that into a village in which leprosy had not previously existed a young bride was brought. At that time she showed no signs of leprosy, but after the birth of her first child, patches of leprosy appeared on her body. The disease had been lying latent, and the weakening of health caused by child-bearing had brought out the disease. After the second child was born, the disease was widespread, and by the time the third child had arrived the mother was a highly infectious case. Perhaps all her children would, in the end, turn out to have leprosy and she would infect directly and indirectly many of the neighbors, so that in the second generation, instead of one, there would be many lepers, and in the third generation far more. All of this can be found out in an Indian village by repeated examination and can be used in influencing the villagers to take local measures to prevent the disease from spreading to themselves, and especially to their children, by the simple precaution of isolating the infectious cases.

In Nigeria, where I recently paid a visit, there are supposed to be about 200,000 lepers, about 1 per cent of the population, although the incidence is much higher than that in some parts. There are some 5,000 cases isolated in leprosaria, and the expense to government and native administrations is so high that there is not much hope of increasing the number in these institutions. Thus only one in forty can be isolated in this way. It is proposed to use these leprosaria not only for isolation and treatment, but also as centers for education. If young men and women in the early and hopeful stages of the disease are trained during their time in the institutions in anti-leprosy methods, then they may be of great use in helping in the campaign when they return home. In one place I found five leper villages where 600 lepers had banded themselves together and were living a self-supporting life. If others can be

persuaded to form such villages, and if treatment can be supplied and provision made for removal of new-born children, the disease may gradually be brought under control.

I have twice had an opportunity of studying leprosy in the Philippines—in 1925 and again in 1931. I was glad to find on the latter occasion that a wise and humane program had been adopted, and that gradually clinics and local leprosaria are being formed, while the education of the people in the nature of the disease and its prevention is being carried out.

3. The third essential toward the control of leprosy is improvement of the general condition of the people. Leprosy does not spread in countries in which social and hygienic conditions are of a sufficiently high standard.

There is the well-known example of the Norwegian immigrants to the Middle West states of America who were found to have leprosy. Hansen later examined all these families and found that under the more hygienic conditions of living in the Western Hemisphere the disease was dying out, and there were no new infections.

In the United Kingdom there are between one and two hundred people suffering from leprosy, who have acquired the disease abroad, but the fact that under the present hygienic conditions in England it does not tend to spread is recognized by the authorities, and leprosy is not a notifiable disease.

There are certain countries and parts of countries in which leprosy has shown marked diminution within the last few years, as the result either of an educational campaign or of industrial prosperity; more often improvement is due to a combination of these two factors. I found, for instance, in the Gold Coast of West Africa that the villages around the Sacred Lake of Bosumtwi had formerly comprised a highly endemic area. At the time of my visit the disease was rapidly diminishing. This appeared to be due partly to a former educational survey and partly to the increased prosperity which had come to the villages through newly established cocoa plantations.

In India we found that leprosy is rare among the wild aborigines living a secluded life in the jungle, obeying tribal laws and not mixing to any great extent with others. When, however, these aborigines under the *Pax Britannicum* begin to mix with others, and especially when they send their young men to work in industrial centers where all mix freely and tribal laws are

no more observed, *then comes leprosy*, to them a strange disease which they do not know the danger of or how to avoid.

Leprosy thus belongs to a stage of human development; it is found at a certain educational, social, economic level. In this it resembles tuberculosis, only that tuberculosis belongs to a later stage. The cynic may adopt the passive attitude and say, "Well, if that is so, wait until these backward races reach a higher stage of civilization and then things will right themselves."

A more worthy attitude is that of those who, realizing that the leprosy problem is inextricably joined up with many other public health, economic and social problems, seek to use leprosy as a handle with which to raise and help the afflicted. In England in the Middle Ages leprosy was bound up with social, public health and humanitarian effort. The 250 leper houses in England were the forerunners of modern hospitals. The means taken by the Church to isolate the leper was the forerunner of our laws for the prevention of infectious diseases.

Likewise, among these backward races we may use leprosy as a key disease which will open the door to general public health reform. Fear is one of the most powerful emotions. When wrongly used, it drives the leper to concealment; when rightly used, it is a great force toward public health and social reform.

Thus, in the control of leprosy, although the exact methods will necessarily vary according to circumstances, our three essentials must be:

1. Sound knowledge based upon careful investigation and widely distributed among the people.
2. A carefully worked out plan based upon that knowledge.
3. The amelioration of the condition of the people in which the fear of leprosy may be used as an important driving power.