

## REVIEWS

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### REPORT OF THE PHILIPPINE LEPROSY COMMISSION.

Of late there has been increasing evidence of dissatisfaction on the part of certain elements of the people with the present manner of leprosy control, with special reference to the system of segregation and conditions of parole. This led recently to a movement on the part of the Philippine Legislature to modify the system, in consequence of which His Excellency, Governor-General Frank Murphy, on July 23, 1935, appointed a commission to study and report upon the problem of leprosy control in the Philippines. The personnel of the Commission was selected to represent those concerned with the legislative, administrative and technical aspects of leprosy work in the Philippine Islands, and comprised a number of influential public-spirited members of the lay public.

The following are some of the more important findings of the Commission:—

(a) *Transmission of Leprosy.* For practical control purposes, the leper who is found by standard methods of examination to be bacteriologically positive must be looked upon as the source of the infection. On the other hand those found negative should be regarded, until conclusively proved otherwise, as being incapable of infecting others. The length of the contact period necessary to cause infection has not been definitely determined. Formerly it was believed that it was long, as measured possibly in months, but evidence is accumulating which indicates that the infection may be transmitted by relatively brief contact. Consequently, for the purposes of control, it is to be considered that any appreciable amount of direct contact between an infectious case and a susceptible person may cause infection.

(b) *Susceptibility to Leprosy.* It is accepted as a fundamental principle that children as a group are especially susceptible, and that the disease is ordinarily contracted during childhood. On the other hand, adults are comparatively immune, for while they may acquire the disease the occurrence of such cases is relatively infrequent.

(c) *Curability of Leprosy.* Treatment of leprosy by modern methods serves to delay its progress, and in many cases results in clinical improvement to a degree so marked that it permits the leper to return to normal life. However, there is as yet no conclusive proof that treatment will absolutely cure the disease in the sense of complete elimination of the germ from the body. It shortens the duration of the bacteriologically positive stage, and prolongs the duration of the negative stage, which may become permanent. Clinical cases which have never been positive may be prevented from becoming so by proper treatment. Likewise, treatment may prevent relapse in patients who previously have been positive but have become negative.

(d) *Recommendations.* It is recommended that group segregation be continued as a basis of leprosy control in the Philippine Islands; that the number of regional treatment stations in the Philippine Islands be increased; that regional agricultural colonies be established for the segregation of positive lepers who are physically fit to engage in agricultural work, and that one such regional agricultural colony be established in one of the provinces adjacent to Manila. That facilities be provided for the adequate observation of negatives prior to parole and follow-up of paroled lepers, and that the bill submitted for that purpose be enacted into law; that funds for the subsistence of segregated lepers be appropriated on a per capita per day basis, and that this sum be fixed at twenty (20) centavos per day per capita for 1936; and that the children of lepers be separated from their parents at birth, and that the necessary additional facilities for the care of such children be provided at Welfareville.

Two members of the Commission, Drs. Manalang and Chiyuto, put forward the following hypothesis regarding transmission:—

“ Nature of leprosy: infectious.

Etiological agent: a microscopically invisible (virus) stage in the life cycle of *Mycobacterium leprae*. The bacillus is a late manifestation of the disease.

Transmission: not hereditary; infection post-natal. Disease acquired by the susceptible through frequent and prolonged skin-to-skin contact. Therefore, primary lesions are multiple, not single.

Sources of infection: both bacteriologically positive and negative lepers (open and closed cases, respectively), and also the cured or paroled cases, are capable of transmitting the disease to the susceptible.

Susceptibility to infection: adults are immune; infection is acquired only in infancy or early childhood before reaching the age of three years; both sexes are equally susceptible.

Incubation period: relatively short; evolution long and very variable.

Curability: not curable as far as known at present.”

These new orientations suggest a new alignment and certain revisions in our methods for the prophylaxis of the disease. Adult immunity, infant susceptibility, infectiousness of the negative and ‘cured’ leper, and incurability of the disease are certainly fundamental in shaping control measures. However, there is as yet only a very small minority supporting the above revolutionary ideas, which are contrary to the rooted conceptions in leprosy.

In answer to these propositions is opposed the generally accepted view on adult susceptibility. A few of the citations are given as follows:—

Talwik, who surveyed the history of leprosy on the island of Oesel in Estonia during 1903-1904, found numerous cases of leprous maid-servants causing the infection of the housewife or the master of the household, or the opposite case of the servant becoming infected from a leprous individual in the household. He also records several

instances in which marriage or a love affair between a leper and a healthy person ended in infection of the healthy partner. In a recent report from Estonia, Spindler states that, contrary to the findings in other countries that the majority of infections occur before the twentieth year, the opposite is the case in his country; most of the infections there occur after the thirtieth year.

Blaschko and Kirschner thoroughly studied the spread of the disease in the Memel outbreak, which occurred in East Prussia and which was traced to five Russian servant girls entering the province between 1848 and 1880. From their findings an especially interesting occurrence may be cited. A leprosy servant girl infected the father of the family in which she was working, and also three of the children. From this family the infection next spread to another family, in which the mother, three children, a female servant, and the second husband of the infected mother were attacked.

Another experience which may be cited is the introduction of leprosy into the island of New Caledonia. Grall recorded that it was brought by a Chinese who died about 1865 after sojourning for two years with a certain tribe. A woman of this tribe, an adult, was attacked one year after the death of the Chinese, or three years after the latter's arrival. From that time the spread was very rapid, and Ortholan reported that ten years later one-fourth to one-half of the population in certain districts had become leprosy. From New Caledonia the disease invaded the neighbouring Loyalty group.

New Caledonia was later used as a penal colony for French criminals. Jeanselme reported that, from 1888 to 1898, 132 cases had occurred among Europeans, chiefly among the prisoners and especially among those under parole who mixed freely with the natives.

Regarding the desirable negative period prior to parole, the following recommendations were made:—

1. The preparole negative period should be one year, since the greatest number of relapses may be expected to occur within this period. The examination of negatives prior to parole should be once a month, at least. In order to avoid delay in effecting parole, the final examinations should be made twice a year as heretofore. In view of the great number of negatives to be examined, both under segregation and paroled, a permanent bacteriologist should be assigned to the committee which makes these final examinations.

2. To overcome one of the chief obstacles to a satisfactory follow-up of paroled patients, funds should be provided for their transportation to the place of examination.

3. Since many paroled patients live unsettled lives, parole officers should seek them out rather than depend upon their reporting themselves, and municipal authorities should be requested to report the presence of such patients living within their jurisdiction.

4. Systematic records of all lepers should be kept by the Bureau of Health, setting forth all data of interest covering the periods before and during segregation, and after parole.

With regard to the sterilization of lepers, the following may be quoted:—

“There seems no reason to doubt that compulsory segregation of all adult lepers outside of segregation institutions, and of all

male lepers in such confinement, would be a very effective measure to control the disease in a country, since young children living with lepers constitute the main source of new cases. However, this Committee realizes that it would be utterly impracticable to attempt to introduce such a general measure. In fact, it would not be desirable if it were possible, for in many cases the disease can be overcome to an extent that will permit the patients to return to normal life, which includes the fundamental privilege of parenthood.

“ On the other hand, the situation is very different with those in whom the disease is incurable and who live in colonies. Though such people should have the privilege of married life if they so desire, they should not be permitted to procreate. It is true that this could be avoided by birth control if effectively practised, but that measure is clearly impossible among the poor and ignorant people from which most of our leper population is derived. Sterilization of the males would be the only effective measure.

“ It is the opinion of this Committee that sterilization of the males under the conditions named might be seriously considered for adoption in our colonies, with the proviso that it should be strictly voluntary. It might be made a prerequisite to marriage, as in Japan and the asylum in Korea that has been mentioned. The introduction of this measure would then leave to the individual man free choice between on the one hand a celibate life in a dormitory or a house occupied only by men, and on the other home life—with, if desired, the privilege of adopting one or more children already afflicted with the disease, thus providing normal family life for three or more people. With added inducements such as a small farm or homestead, materials for a house and tools to work with, such couples might well become self-supporting, self-respecting normal citizens, neither a burden to the State themselves nor offering future burdens for the State to carry.”

Regarding marriage of lepers, the following conclusions and recommendations are made :—

1. This Committee strongly endorses the view that, for reasons which pertain to all aspects of the leprosy work, the conditions of life in the segregation institutions should be made as nearly normal as practicable.

2. Family life, which involves marriage among lepers, should be permitted and encouraged among the classes of inmates for whom this is desirable in the institutions in which it is feasible—referring to the colonies and not the treatment stations.

3. The principal objection to marriage among lepers, namely the resultant birth of children to leper parents, does not outweigh the advantages of family life. However, because these children create problems for the parents, the State, and the individuals so born, the prevention of childbirth by sterilization of the male partners is suggested. This intervention should be strictly voluntary, and it might be made one of the conditions upon which permission to marry would depend.

4. Further requirements that should be considered as regards feasibility are : (a) that the partners should undertake to support themselves, wholly or in part, and (b) that they should adopt and

support a leper child from among those in the institutions, which would be advantagous to the families, the children and the State.

5. In this connection, consideration should be given the liberalization of the divorce laws in favour of lepers, in order to ameliorate the circumstances of both the segregated people and the families whom they leave behind.

Prof. W. I. Kedrowsky writes on *Modern Aspects of the Epidemiology of Leprosy*. He puts forward a 'working hypothesis for the scientific proof of which a number of links are still missing.' He writes as follows:—

"Lepers discharge myriads of acid-fast bacilli, and these in part are inhaled by people in contact with the patients, and in part are deposited upon surrounding objects. Most of the microbes that are detained by the oral and nasal mucosa undergo no further development and perish. By living in the human organism they have become so much individualised on account of their close relation with the cells and fluids of a particular individual that in another one, with his different biochemical and immunological peculiarities, they cannot become adapted. When adaption does occur it is exceptional and occurs very gradually.

The microbes that are deposited upon the surrounding objects also perish for the most part. However some—perhaps those that possess the highest vitality—adapt themselves to the new surroundings by making an abrupt and unexpected mutation, thus producing a new form with considerable resistance against harmful outside influences. The filaments of the actinomycoïd species and the streptothrices, as well as the mycoïds obtained from acid-fast cultures from leprosy and tuberculosis, are distinguished by a great capacity for growth and a striking resistance to desiccation. At a certain stage these actinomycetes produce the so-called spores, or conidia, with which the branching filaments end. Any disturbance disseminates these spores in the air, and when they are inhaled by people they are detained by the mucosa of the upper respiratory tract.

"Why does the microbe need such a cyclic course in its development? First, in order to renovate its vital capacities, since by passing into another form it must considerably change its vital aims. Second, in order to lose the too-individualized qualities acquired by life in a diseased person, which interfere with its adaptation to a new one. It may be recalled that I infected the rabbit, not with the acid-fast microbe taken from the leprosy nodule, but with acid-negative strains that had lost their former biologic qualities, i.e. their former individuality.

"Having penetrated the mucosa, the modified microbe is taken by the blood or lymph stream to the lymphatic glands and in general to the organs rich in reticulocytes and endothelium, by which they are phagocytized. This phagocytosis usually leads either to their destruction or to their further development within the phagocytes. Those organisms that are not destroyed, having reached a certain stage of dissemination and perhaps maturity, finally get to the skin, for which they have a certain affinity just as the organism of typhoid fever has for the lymphatic system, or the toxic of tetanus for the nervous system."

The following is a summary of an interesting article on Incipient Lesions of Leprosy, by Drs. Rodriguez and Plantilla:—

“Some leprosy workers believe that there are many frustrated cases of the disease which never develop marked cutaneous or neural manifestations and therefore are seldom seen in treatment centres and never in hospitals. To obtain direct evidence on this matter is difficult, as it needs periodic examination of many such cases, together with their contacts, carried on systematically over a long time—at least from ten to twenty years.

“We have had the opportunity of examining repeatedly two distinct groups of patients showing the earliest, bacteriologically negative lesions of leprosy, along with others who have been in contact with the disease, but as yet show no manifestation of infection. However, the maximum period that any of these cases has been studied is only seven years, so that our observations must be considered as merely preliminary.

“The first group, observed for seven years, consists of 336 children born of leper parents at the Culion Leper Colony, previous to 1924. They had been exposed to the disease for varying periods of time. We have also taken into consideration the studies by Chiyuto and Manalang on younger Culion children born after 1924 and now taken care of in Manila. In these children at Culion the chaulmoogra preparations, administered intramuscularly, did not prevent the development of bacteriologically positive lesions. Transfer of Culion born children to Manila when two years of age has apparently diminished greatly the number becoming positive. Nevertheless, Manalang and Chiyuto have found that almost all these young transferred children show lesions which they consider early manifestations of leprosy. These findings suggest that good hygienic care and proper food do not prevent the appearance of clinical symptoms, but do tend to prevent the infection from progressing to the bacteriologically positive stage—in other words, under these conditions many cases are “frustrated.” However, final conclusions must await several more years of study of these cases.

“The other group consists of 225 “closed” cases of leprosy treated at the Cebu Skin Dispensary (out of a total of 563 cases seen there) who have been re-examined clinically and bacteriologically at least twice. The period of study varied from seven months to four years, the average about two years. Of these cases, 31 or 13.8 per cent. had become bacteriologically positive during the period of observation.

“The sex incidence of those becoming positive is practically equal, 13.6 per cent. among the males and 14.0 per cent. among the females, but interesting differences between the two sexes in the age distribution were noted.

“With regard to the type of lesion, the red macule was the one most apt to become positive. A sudden change in the area of localized anaesthesia independent of macules, either a rapid increase or decrease, was found to be of ominous import.

“The proportion becoming positive in the small group which had received treatment regularly was significantly less than in the larger group treated irregularly, although in some cases even prolonged intensive treatment did not prevent them from becoming positive.”

Dr. Isamu Tajiri, writing on "*Leptotic Changes in the Lung*" comes to the following conclusions:—

"In a case of nodular leprosy bacilli enter the lung in more than one way, but chiefly by the blood stream, and there they produce small lepromata in the alveolar septa. These, however, do not grow to a size sufficient to be detected microscopically, as usually occurs in the liver. As for the macular or neural case, leptotic changes never occur in the lung except in nerves.

"The author has recently seen an article on lung leprosy published in India. In this is given an account of a patient whose sputum contained many acid-fast bacilli which when inoculated into guinea-pigs caused no infection, by reason of which it was concluded that the presence of the bacilli was due to lung leprosy. As is seen from the foregoing, the present writer is of the opinion that leprosy bacilli are scanty in the lung. It is believed that bacilli found in the sputum come from the upper passages rather than from the lung, since advanced cases of nodular leprosy always have leptotic infiltration of the pharynx and larynx and these often ulcerate."

Dr. H. C. de Souza-Araujo writes regarding the use of methylene blue in the treatment of leprosy:—

"Leprologists aware of these experiences, and familiar with the article on toxicity of certain proposed antileprosy dyes by Emerson and Anderson, will not use methylene blue and other dyes in leprosy."

Dr. Lie gives his personal experience in seeking for bacilli in *leprides*. Examinations were made of material from 10 cases, 4 of which were *tuberculoid* leprosy. His method of examination is as follows:—

"The pieces of skin are fixed in a 10 per cent. formalin solution, or in Muller's fluid. The first mentioned is the simpler and handier, and possibly the better for the demonstration of bacilli; the other fixative is more suitable for the examination of cell and tissue-structure. The pieces can remain in the fixing fluid for 24 hours, after which they are well rinsed in water and then hardened in alcohols of increasing concentration. If tissues are left in the Muller fluid very long they may become so hard that it will be difficult to obtain thin and good sections. The tissues are generally embedded in paraffin, though one may also use celloidin, which affords greater protection of the tissue structure.

"The sections are stained in carbol-fuchsin at 37° C. for 20 to 60 minutes, though there is rarely any advantage in staining for longer than 45 minutes. One first examines a few sections that have been stained for 20 minutes; if bacilli are not found in these the staining must be prolonged. After rinsing the sections in water decolorization and counter-staining is effected with Gabbet's fluid for 30 seconds or a little more, according to the thickness of the sections. They are again rinsed in water, cleared in xylol, and mounted in Canada balsam. The contrast colour is always somewhat faint, but that is of little significance for the finding of bacilli; in fact, a faint counter-stain is often preferable to a deep colour. However, if one wishes the contrast colour strengthened, one can add carefully a little Loeffler's alkaline methylene blue. Sulphuric acid is absolutely preferable for

work with leprosy bacilli, as it decolourizes them less than the other acids generally used. These organisms are undoubtedly somewhat less acid-fast than the tubercle bacilli."

Under the Editorial and Correspondence, the question of the *Infectiousness of Nerve Leprosy* is discussed. Degrees of infectiousness are classified thus:—

1. Those that have no active surface lesions and are definitely negative bacteriologically in the nose. In the skin there may be only areas of anaesthesia, or at most areas of moderate hypopigmentation, usually indefinitely demarcated—"pure nerve cases." The danger from these is probably quite negligible. Some authorities would doubtless also include cases with more definite pale anaesthetic macules which are not progressive, and which do not react to potassium iodide if that is used. In this group will fall many 'abortive' fully arrested cases.

2. Those with simple, active, progressing macules, hypopigmented in coloured skins; they may be flat and pale throughout, or they may have reddish margins, perhaps with very slight infiltration; there is typically more or less anaesthesia in these leprides and perhaps elsewhere. Lie and others hold that these cases are potentially if infrequently infectious, though bacilli cannot be found in smears from the skin or nose; they find that a few can usually be demonstrated in sections if sought with sufficient care.

3. Those with more marked and extensive skin infiltrations, typically showing abruptly raised edges; the infiltrated portion may be marginal, with central healing; or the entire lesion may be infiltrated; the surface is often irregular, "granular." This refers to the tuberculoid variety. Though, typically, cases of this kind are bacteriologically negative in smears, there is evidence that by and large the lesions contain more bacilli than do the simpler leprides, and that they may occasionally give (very sparsely) positive smears, especially when in a state of lepra reaction. For the present such cases are best looked upon as probably less free from suspicion than the preceding group, though far from the category of the cutaneous-type case.

4. Of a somewhat different clinical category, apparently, are the cases referred to by Muir as "juvenile" which when seen may be bacteriologically negative but are of particularly uncertain future. This may be the group with pale but reddish lesions which Rodriguez, in an article in this issue of the Journal, describes as prone to develop into the cutaneous form. This group needs more precise differentiation.

5. Administratively of a different category from the foregoing are those neural cases which, whatever their original clinical variety, have become bacteriologically positive though without becoming clinically "cutaneous," (i.e. with lepromatous lesions). Such cases, whether the positive smears are from the nose or skin lesions (tuberculoid), are obviously open and are to be dealt with as such.

6. Quite apart from the foregoing, so much so that they hardly come within the scope of the present discussion, are the secondary neural cases. These in the past have had lepromatous lesions which have subsided and left only neural manifestations. These cases are recognized (a) to be apt to have more bacilli in their residual lesions



than have the primary neural cases; (b) to have, frequently persistent residual nasal lesions; and (c) to be prone to relapse."

**Infection Lepreuse des Rats par La Voie Oculaire**, by E. Marchoux, V. Chorine and D. Koechlin. *Extrait des Annales de l'Institut Pasteur*. Dec. 1935—Tome 55, p. 632. (The Infection of Rats with Leprosy by the Ocular Route).

This study was undertaken because the face is so frequently first attacked by leprosy. This suggests that infection may take place through the eyes. If rat leprosy can be acquired by rats in this way, then the prescription is strengthened that human leprosy can likewise be acquired by man through infected droplets landing in the eye.

At the union of the lachrymal canal and the gland of Herder, there is a small follicle of lymphoid tissue, the only tissue of that nature found in the orbit. From this the lymphatics drain into the submaxillary and cervical lymph nodes.

Four young rats were chosen and a drop of suspension of rat leprosy bacilli placed on the conjunctiva of each. One died after a month and was found negative. Two were sacrificed after a year. The lymph node in the inner canthus was found enlarged to the size of a large haricot bean and full of masses of Stefansky's bacilli. The submaxillary and cervical glands were enlarged and full of bacilli, and there were a few bacilli in the axillary glands. The last rat was sacrificed 16 months after inoculation. It was the same as the other two, but the gland of Herder was completely degenerated, and the right axillary gland was rich in organisms.

This proves that Stefansky's bacilli can enter through the conjunctiva without lesion, and that they first multiply in the lymphatic tissue.

The authors mention Calmette's work which showed that tubercle infection could not be caused by instilling a tubercle suspension into the eyes of rabbits and guinea pigs; but then there is no lymphoid tissue in the orbits of these animals. In man, on the other hand, there is lymphoid tissue in the eyelids, and it is suggested that the bacilli first multiply in this and thence infect the forehead. On the other hand the infection of the eyeball is not primary, but secondary to generalisation of the disease.

### **Leprosy Control in Colombia, South America.**

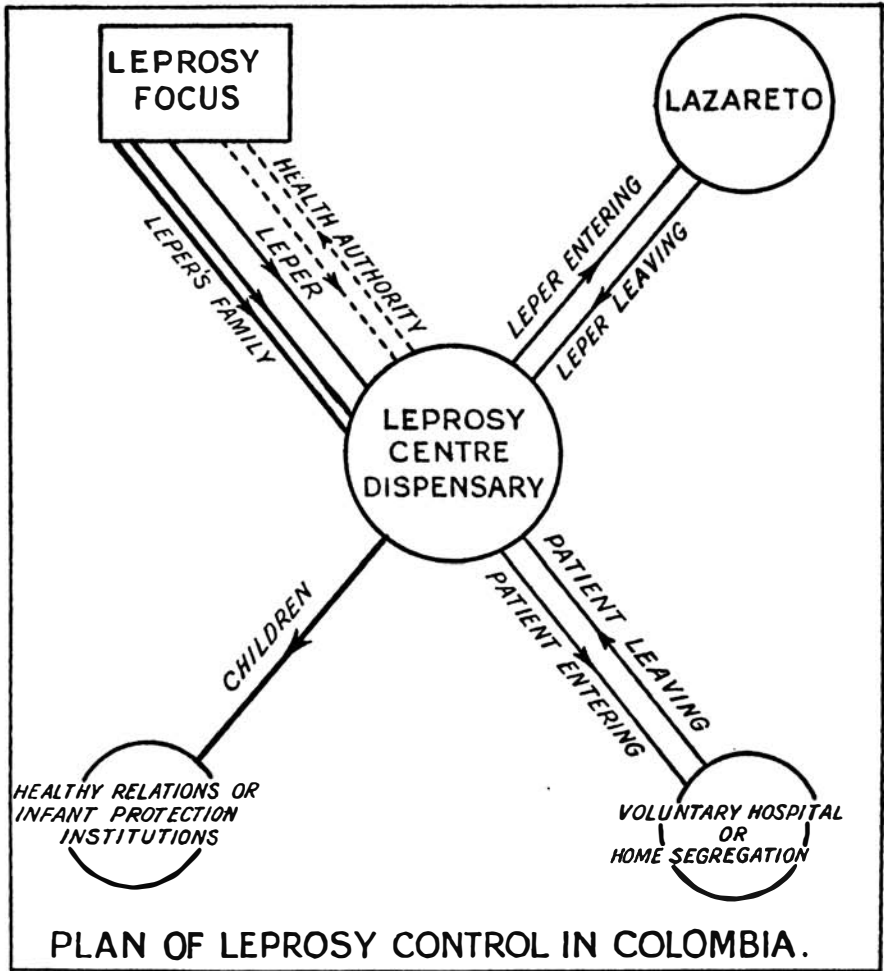
(Translated from Spanish by Dr. J. W. Lindsay.)

In the official report of the National Health Department for the years 1931-32, published in the "Boletin de la Oficina Sanitaria Panamericana" of September 1934, there occurs the following:—

"Campaign against Leprosy. There may be calculated to be a total of more or less 20,000 lepers in the country, which represents a co-efficient of 2.5 per 1,000 inhabitants, which is, indeed, an alarming state of affairs. Supposing that the majority were isolated and that the total of such reached only 15,000, the co-efficient would still be 1.88 per 1,000, which is perhaps nearer the real figure, seeing that isolation has been compulsory in Colombia for some 50 years. The

numbers of lepers, submitted to treatment in the three Leprosy Institutions up till August 1932, reached the figure of 4,443 of a total of 7,347, that had been isolated. From 1919-1931 there were admitted 8,216 patients, of whom 4,892 died, there remaining at the end of 1931, 7,554 cases.

"The approximate number of healthy children under 15 years of age, who live in the Lazareto de Agna de Dios in intimate contact with the patients is 1,338.



"During the last twelve years the actual annual increase of lepers has been 277 cases, and in the last ten years the nation has spent on the Leprosy Institutions an average of \$1,626,763 annually, or some \$246 per patient. When one considers the vastness and the importance of the problem, its solution appears to be beyond our powers, however good our intentions may be, but there is one very significant fact, which has rather changed the outlook, and that is that under treatment the majority of the new cases get cured, and within a certain period the infectious cases become non-infectious.

"In a group of 648 cases, specially treated in the Lazareto de Agua de Dios, there have been 24 per cent. of cures in four years. Experience has shown that the establishment of treatment stations for the voluntary treatment of incipient cases is more effective than compulsory isolation.

"On the other hand, it may always be impossible from the economic point of view to isolate more than a certain number of cases, because to isolate 15,000 cases properly, would require a sum of \$3,690,000 per annum, about a tenth part of the whole national budget. At the present time, of the funds voted for the Public Health Department, 75 per cent. goes towards the support of the Leprosy Institutions alone.

"It is quite as urgent a matter to fight leprosy, as it is to fight tuberculosis, syphilis and malaria, although these latter are more widespread and cause a greater number of victims, while tuberculosis is a hundred times more contagious than leprosy, and is responsible for 10% of the general mortality. We ought, of course, to follow the shortest and most economical road, but in order that the nation may continue voting 10% of its health budget for leprosy, it is necessary that the regional and municipal authorities should contribute their share.

"The Government ought to take the first step by letting the situation be known throughout the whole land.

"There is, indeed, a proposal at present before Congress with this end in view, and if the bill is passed into law, it will constitute one of the most valuable factors in the work of public health. Two objects will be attained, the co-operation of the provincial, or regional and municipal authorities, and the establishment of anti-leprosy centres or dispensaries, from which the health authorities will be able to reach the whole of the territory of the country, which up to the present has not to any large extent benefitted from the health services."

**"Budgeting for Leprosy."** "Bolatin de la Oficina Sanitaria Panamericana."—December 1935.

(Translated by Dr. J. W. Lindsay.)

In his message to Congress—July, 1935—the President of the Republic of Colombia, (South America), in reviewing the National Health services, drew attention to the very disproportionate amounts voted for the leprosy institutions, and the very meagre help given for the other branches of the medical services. He made a comparison between his own country and Brazil, where he considers things are much better managed. He said:

"There is now no mystery about the way in which our Colombian race is undergoing an irreparable biological deterioration through want of proper nourishment, and the ravages of the tropical diseases, which are destroying it.

"In many places the finest specimens of our race, the colonisers of our territories, the founders of our cities are disappearing, and their place is being taken by a miserable crowd of anæmic, malaria-stricken planters of coffee. Isn't there any possibility of ridding our country of those diseases? How is it that Brazil has gradually

regenerated her even more mixed race, and is now saving the people from their endemic diseases?

"The reason is that for a long time now there has been practically a dictatorship in matters of Hygiene and Public Health, which has maintained itself above all considerations of the Law: and there the State has not hesitated to employ a considerable part of their external loans for the expenses of the National Health Department, while the scientific institutes work continually in the preparation of cheap remedies for combating tropical diseases.

"Here, on the other hand, the Republic of Colombia votes 80%—eighty per cent.—of its Public Health Budget of \$2,000,000, to meet the expenses of leprosy institutions alone.

"The remaining 20%—twenty per cent.—goes for salaries of officials, public dispensaries, port medical authorities, infant welfare, anti-venereal, anti-anæmic, anti-alcoholic, anti-tubercular campaigns, for the Samper and Martinez Laboratory, and for the general expenses of the Public Health Department.

"It is a grim fact that in a land peopled by malarial subjects of the very poorest types, the attempt is made to fight malaria with the paltry sum of \$18,000, hardly enough to pay the travelling expenses of the doctors who visit the affected regions.

"For the anti-venereal campaign there is voted the sum of \$5,000.

"What is the use, then, of a Health Department, which is purely a medical bureaucracy without resources, which spends its time running about over the country, in order to become more convinced that it is full of disease, and that our race is exhausting its energies in the struggle against nature, and without any defence against disease?

"The Public Health Department is nothing more than a very expensive administrative department for leprosy institutions, and anything else it does is only a deception of the public, who imagine they are paying big contributions for the extermination of yaws, malignant fevers, venereal diseases, etc., and who are kept under the delusion by the incomplete statistics published by the Medical officials, as proof of what the State does for the Public Health.

"There are also certain anomalies that must be corrected, even at the risk of offending vested interests. For example, there is the fact that the maintenance of the Lazareto de Caño de Loro, where there are 350 patients, costs the Health Department \$500,000 per annum, equivalent to a monthly cost of \$120 per leper.

"Whatever the Public Health Department may be, it certainly is not an institution for curing the people of Colombia of tropical diseases, or making the country a healthy one.

"I call upon you, gentlemen of this Congress to seek some way in which the small Health Budget may be put to some better use, seeing that we cannot yet hope to meet all the national needs in this respect."

### **Leprosy in Ecuador, South America.** Boletín de la Oficina Sanitaria Panamericana, February, 1936.

(Translated by Dr. J. W. Lindsay.)

"There is only one Leper Hospital for the whole of the Republic, that of the "Verde Cruz" of Quito, the capital, and there is not sufficient accommodation in it for all the patients. The question is under consideration as to the economic possibilities for the construction

of a Leprosy centre for the sea-coast districts, and the best place for it would be in the Taruma zone of the Province of El Oro. In other parts of that region such as Capiro, and Piñas and other towns there has been a considerable decrease in the number of cases. From June 1934 till May 1935, there were only seven cases in Guayaquil, and twenty in other towns of the coast."

**The Leper Quarterly,** (Official Organ of the Chinese Mission to Lepers) Vol. IX, No. 4, December 1935.

The report of the Second National Leprosy Conference is given. The following are the Resolutions arrived at:—

(1) "That the Public Health Authorities in China be urged to give fellowships to graduate physicians for the study of leprosy abroad, and that such fellowships should be given to physicians who are prepared to take up leprosy work on their return to China.

(2) "That the National Health Administration be asked to arrange for government subsidies through the Provincial, Municipal, or Hsien authorities as the case may be, to the extent of half the cost of treating patients in leprosaria or leprosy clinics.

(3) "That the Provincial and Municipal Governments be asked to request hospitals, clinics and health centres to undertake the treatment of suitable cases of leprosy in clinics, with a view to stamping out leprosy at its source.

(4) "That this Conference requests the Chinese Medical Association to establish a Council on Leprosy, as it is necessary to bring the problem of leprosy control before the medical profession as well as the general public.

(5) "That this Conference urges on the Central Government the importance of the National Health Administration setting up a Special Section on Leprosy.

(6) "That the Central Government be asked to introduce such legislation as shall prevent discrimination against cases of leprosy as compared with patients suffering from other diseases of a mildly contagious nature.

(7) "That the Ministry of Education be asked annually to hold a 'National Anti-Leprosy Day' with a view to educating the public on this subject.

(8) "That the Ministry of Education be asked to arrange for courses of instruction, both practical and theoretical, on the subject of leprosy, in medical schools."

The following are some interesting quotations from a paper on *Leprosy in Canton*:—

"The rich lepers often hide themselves inside their houses. They never expose themselves to the sight of outsiders. They live on, marry, and have offspring as ordinary people.

"The slight sufferers are often deceived by the wrong idea that leprosy may be given up by sexual intercourse with others. They attempt to remove the disease by going to prostitution.

"The poor lepers often give their children to other people as stepsons, servants or concubines.

"The lepers who acquire the disease from their far ancestors

can hardly be detected by their outside looks. Their children often acquire such a disease too. They often slip into prostitution of the lower class. The communication of leprosy through this channel is unnoticeable, and it becomes a great danger to the populace.

“It is an undeniable fact that many boat people become infected with leprosy. Although the exact number is unavailable, yet we can estimate that about three or four per cent. of the boat population are suffering from this horrible disease. The number is so enormous that a thorough scheme for preventing and controlling leprosy among them has become a very important problem of public health.”

**Fieberbehandlung bei Lepra.** (Pyrotherapy in Leprosy) by B. Nocht. *Archiv für Schiff. und Tropen-Hygiene*, Band 40, Heft 1, 1936.

Dr. Nocht visited the Philippines in 1934/35 and there carried out experiments in company with Dr. Velasco, to test the effect of fever-production in the treatment of leprosy. For this purpose he selected three preparations:—*Sulfosin*, *Anaesthesulf* and *Pyriifer*. The first two of these proved unsuitable and the experiments were therefore restricted to *Pyriifer*.

Six patients were treated with 3 to 4 series of 10 injections. In one of these lepra reaction was set up, but in the other five there was no sign of lepra reaction. These five patients were in good general health, and were not suffering from any complicating disease. In three there was apparent clinical improvement, and in two there was no change. During the fever following the injections there was slight swelling and rubification of lesions, which subsided as the fever passed off. After three months treatment they were still bacteriologically positive. Dr. Nocht regrets that it was not possible for him to carry on treatment longer, but considers that the results were promising and that further trials should be made.

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In the Editorial comment is made on the article by Spindler on *Pathogenesis of Leprosy* reviewed on p. 96 of the last issue of *Leprosy Review*, as follows:—

“In this article the author reports findings in regard to the incidence of leprosy in the community and the susceptibility of groups and individuals to leprosy that are at variance with the commonly held views. Most workers are of the opinion: (1) that most adults are immune to leprosy and children and young people are often susceptible; (2) that most infections are contracted in the early years of life; (3) that such infections are more likely to be severe than those contracted later in life; (4) that there is little difference in susceptibility to leprosy between different races and families. Spindler however expresses very different views. He believes that a very important factor in the epidemiology of leprosy is an hereditary predisposition to leprosy which is seen in both children and adults of certain families, and that the factor which decides the disease or not and whether the disease takes a mild form or a severe form, is the closeness or other-

wise of blood-relationship to families with this hereditary predisposition to leprosy.

"This idea of hereditary susceptibility to leprosy is not a new one. Molesworth has advanced the view that leprosy died out of England because the susceptible stock died out with the production of racial immunity to leprosy. We recently read a statement attributed to an American worker that the white races are now practically immune to leprosy. Several workers have expressed the view that hereditary predisposition is possibly a factor of some importance, but Spindler apparently considers it of paramount importance.

"Spindler thinks that in countries where leprosy is highly endemic most of the susceptible persons are infected in childhood and that this explains the immunity of adults, while in Estonia with little leprosy and better hygienic conditions, susceptible persons are often not infected in childhood but in adult life. To this Spindler attributes the differences in the epidemiology of leprosy observed between Estonia and India for example.

"There is no doubt that leprosy is commonly spread in families to blood-relations, but this is usually attributed to close contact particularly in childhood and not to hereditary predisposition. All workers find that conjugal infection is rare, but this is usually attributed to the immunity of later years and not to the fact that there is no blood-relationship and hence no hereditary susceptibility. We do not think that studies of Indian conditions and of leprosy in families in India will support Spindler's contentions.

"In our last issue we published a study of leprosy in families by Dr. E. B. Christian. This study tended to show that in the families of lepers (i.e. in those who might be expected to have an hereditary predisposition to leprosy) the factor which influenced most markedly the incidence of leprosy was the age at which infection could have occurred, young children exposed to infection developing the disease more often and more markedly than older children or adults. This does not fit in with Spindler's theories. The theory of hereditary predisposition is difficult to reconcile with the finding that children of leprous parents if separated from the parents at or soon after birth; show in adult life a leprosy rate little or no higher than that of the general population. The whole question is very involved and accurate data on which to base judgment are difficult to obtain. The matter should receive further study but we doubt if the theory of hereditary predisposition being such an important factor in the epidemiology of leprosy can be reconciled with the facts."

S. N. Chatterji writes on *Early Manifestations of Leprosy*. He gives the following instructive list of injuries associated with early manifestations of leprosy:—

"A man was kicked on the right ankle while playing football, with pain and swelling of the affected part. When the swelling subsided a loss of sensation was noticed and later the part became erthematous. On examination anaesthesia and nerve thickening were detected.

"A fish bone pierced the thumb of a woman and was removed at operation. A few weeks afterwards anaesthesia of the right thumb was noticed and later erythema and nerve thickening were found.

"A woman was bitten by a snake in the right index finger; later anaesthesia developed in this finger and later still typical leprosy lesions appeared in various parts of the body.

"A boy was bitten by a cat and later depigmentation and anaesthesia developed at the site of the bite and later still in other parts. Similar findings we have observed in cases of bites by dogs and foxes.

"A blow with a stick on a shoulder was followed by the development of an erythematous anaesthetic lesion with thickening of the supra-clavicular nerve.

"In the following case it seems clear that the injury simply provided the occasion for the detection of pre-existing leprosy. A man had a severe blow on the head, became unconscious and on regaining consciousness noticed paralysis of the left side of the body. On examination there was anaesthesia, muscular wasting and nerve thickening in the left foot and hand.

"Occasionally in such cases arises the question of workmen's compensation for disability owing to injury sustained while at work. The following is such a case:—A stoker on board a ship, while shovelling coal, hit his elbow against a metal bar. There was severe pain and he had to cease work. The pain took several days to subside and a few days later anaesthesia developed in the hand. A few weeks later he was sent to us for diagnosis and for an opinion regarding the question of the relation between the injury and the disability. He was found to be suffering from leprosy for he showed a thickened ulnar nerve and anaesthesia in its distribution. We expressed the opinion that the injury may have precipitated the appearance of symptoms of leprosy or may have aggravated slight symptoms previously present, but the injury alone could not have caused the symptoms without a previous, possibly latent, infection with leprosy."

Dr. K. K. Gupta writes on *Chloretone in Nerve Reaction*:—

"Chloretone is a white crystalline powder with the taste of camphor. It is trichlor-tertiary-butyl-alcohol. It is soluble 1 in 200 of water, 1 in 10 of glycerine, 3 in 2 of alcohol 90%, 1 in 50 of liquid paraffin, 1 in 12 of olive oil. It has local anaesthetic, antiseptic and hypnotic properties.

"Nerve pain among the leper patients is very common and often severe. Sometimes it is so distressing that patients remain sleepless for several nights. It is common in the limbs. In the majority of the cases the thickened and tender nerves can be palpated but in some cases these signs are entirely absent. Among the drugs advocated for the relief of nerve pain, ephedrine and intradermal injection of hydnocarpus oil esters are the most effective. Sometimes these remedies do not bring relief to the patients. We have tried injections of chloretone (gr. V dissolved in 1 c.c. of olive oil) given subcutaneously along the course of the nerve, the injection being given in several places. In some cases this procedure was found more efficacious than the administration of ephedrine. Except for slight oedema at the site of injection, no untoward effect was met with. We had no definite information regarding the proper dose but found gr. V dissolved in 1 c.c. of olive oil was sufficient to obtain the desired result.



It is too early to make definite statements regarding the superiority of this method of treatment over recognised forms of treatment. I shall be glad if any of the workers try this remedy and publish their results."

**Tuberculoid Leprosy amongst Chinese.** Copia. Exello Volumine Deliberationum IX=I Congressus Internationalis Dermatologorum., by Dr. F. Reiss, Shanghai. Six cases are described in detail and the paper is summarised as follows:—

"It appears evident from the reported cases that the clinical picture of the so-called tuberculoid leprides is not uniform and that there are 3 varieties observed in China. Discoid, solitary lesions closely resembling Sarcoid-Boeck or tbc, cutis luposa or verrucosa but not showing any lupomas by vitropressure. The nature of the granulation tissue is clinically easily demonstrated as of the nature of a yellowish infiltration not only along the border of the lesion but also in the centre.

"Solitary, and quite frequently, multiple annular lesions with raised papular margins and atrophic depigmented centre.

"Discontinuous serpiginous lesions of the previous type with the only difference that one part of the creeping zone is open.

"That the histopathological changes vary according to the cutaneous manifestations, the main characteristic feature being that the tuberculoid granulomatous infiltration is always well demarcated and that furthermore there is generally an atrophy of the epidermis present. The paucity of bacillary findings is emphasized but cases have been reported where, besides the granular form, lepra bacilli could also be traced.

"That tuberculoid-leprosy should be recognised as a special sub-type and designated either with NT. occurring in the neural main types or with CT. when lepromatous changes are present."