

REVIEWS.

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This number opens with a paper by Perry Burgess, President of the Leonard Wood Memorial. In it he gives his reminiscences of five months of travel in Japan, Philippines, Java, Malaya, Indo-China and China. We give a few quotations:—

“Segregation has been generally considered as the only means of eradicating leprosy, but with probably not more than two per cent. of the lepers of the world in isolation it must be quite obvious that segregation will never solve this problem.” “One must admire the efforts being made in the Philippines, and if the Philippine government can continue to expend for this purpose the sums that have been spent in the past, reduced somewhat by the establishment of agricultural colonies now being proposed, this will constitute probably the most thorough experiment as to the effectiveness of isolating lepers from the well population that we have ever known. However, we are compelled to grant that after over thirty years of this heroic segregation there is no striking evidence that the number of clinically observable lepers has decreased.”

“I would urge the building, in every country where leprosy is a serious problem, of at least one central institution, manned by medical officers with sound scientific background. These institutions may have few or many patients, but it is essential that there be enough for research. These centers should perform a three-fold service: first, carry forward investigative studies on the nature of the disease; second, make available to local doctors and institutions reliable information as to the best that is known with respect to treatment; and third, control the propaganda of the country to the end that it may be trustworthy.”

Tracheitis and Bronchitis Leprosa is the subject of a paper by H. P. Lie of Bergen. After quoting from former writers he describes three of his own cases. In the second of these he found leprous infiltration in the larger and to a certain extent in the finer bronchi. About this case he writes:—

“The findings in Case 3 prove decisively that leprosy bacilli can enter the mucous membrane of the air passages without producing any reaction on the part of the tissue, when the upper protective epithelial layer is missing. Herein lies the explanation of why it is so extremely difficult—almost impossible—to determine with certainty the seat of the primary affection in leprosy, in contrast to the condition as regards syphilis and tuberculosis.

“The leprotic affection of the nerves in the trachea and bronchi is also of considerable interest, and has not, as far as I am aware, been recorded previously. It points strongly to the fact that the nerve infection originates in the most peripheral nerve branches and then advances, more or less rapidly, towards the centre along the nerves. There is no reason to assume that conditions should be otherwise in the skin, and consequently this finding in the nerves of

the trachea supports the assumption that nerve leprosy is due to an ascending leprotic neuritis."

His conclusions are: "Under certain conditions leprosy changes of considerable degree may be found in trachea and bronchi. Traumatic actions of various kinds seem to produce, or at least to promote, these leprosy changes. Leprosy bacilli may pass through the mucous membrane of the trachea and bronchi without producing macroscopic changes. This fact suggests an explanation for the rare occurrence of the so-called leprotic chancre, if it is found at all."

The paper is illustrated with well-produced photographs and photomicrographs.

J. N. Rodriguez of Cebu, Philippine Islands, contributes an article on *Significance of the Histology of Bacteriologically Negative Lesions of Leprosy*. Out of 102 cases of leprosy found on routine examination to be bacteriologically negative, 54 per cent. showed *tuberculoid* changes. Of the 44 remaining cases the specimens showed only round-cell infiltration in 40, while in 4 the changes were so slight that the specimens were considered practically normal. He confirms the opinion that cases definitely of the tuberculoid variety do not undergo conversion to the cutaneous type.

Clarence Mills, Professor of Experimental Medicine, University of Cincinnati, writes on *World Leprosy in Relation to Climatic Stimulation and Bodily Vigor*. His summary and conclusions are as follows:—

"As with other infectious diseases over the world, leprosy tends to be more severe and rapidly progressive in the regions of lesser climatic stimulation. It is almost universally true that those areas of the earth with a stimulation index of less than 3.0 are cursed with leprosy as a major public health problem. With an index above 6.0 the disease becomes distinctly more mild and less prevalent, while above 12.0 it continues to exist only by importation of cases. Where the stimulation rises to 18.0 or above, there seems to occur a spontaneous cessation of the disease as a public health problem.

"Leprosy, imported from the tropics into cooler portions of the earth persists only in those regions of benumbing cold where the real index of climatic stimulation falls to subtropical levels. Scandinavia and the maritime provinces of Canada, with their long cold winters, exemplify this depressing effect of prolonged cold on body vitality. The last wave of leprosy in Norway coincided to a remarkable degree with a world-wide period of subnormal temperatures and increased storminess. On the other hand there is considerable evidence that, when the disease spread with such virulence over Europe in the Middle Ages, the earth was under the influence of a major heat wave that sapped the vigor and vitality of population masses in temperate zones.

"These facts seem to have definite implications concerning the handling of the leprosy problem. As with tuberculosis, leprosy patients should be segregated, not where the disease is worst, but in the most stimulating regions available. Potential leper material,

such as the children of leprosy parents, should also be transferred to invigorating climates if we would make progress in eradicating the disease. The use of artificial climatic stimulation by indoor air-conditioning methods needs careful consideration and trial by those attempting to bring the disease under control. One cannot stress too strongly the close relationship between resistance to infection and the level of general body vitality. Since the climatic environment so largely determines bodily vigor and vitality, it must be considered of fundamental importance in studying the biology of disease."

In writing the next paper *The Occurrence in Leprosy of Positive Serodiagnostic Tests for Syphilis* six different authors collaborate:—

"A total of 59.3 per cent of the 50 sera from leprosy patients that were examined in the investigations of this committee showed positive serological reactions. Of these reactions 53 per cent were obtained with the complement-fixation tests, and 62 per cent. with flocculation tests. The percentage of positive tests is somewhat higher among patients with advanced leprosy, and in those showing numerous organisms in the lesions. It is still impossible to say whether the anesthetic, nodular, or mixed forms of leprosy yield the highest percentage of positive reactions. It seems apparent that yaws is not the cause of many positive serologic reactions for syphilis among lepers in the United States. There is a marked discrepancy in the results obtained with comparable specimens of blood sent to various serologists. Up to the present time no evidence has accumulated to indicate that a disease caused by an acid-fast bacillus will give positive flocculation or complement-fixation reactions for syphilis. It would seem logical to suggest that the entire question of the etiology of leprosy is in need of re-investigation."

Dr. Nina Ermakova contributes a valuable and well-illustrated paper on *The Central, Sympathetic and Peripheral Nervous Systems*. He quotes the contributions on this subject by various previous observers down to the work of Lie.

"In the cord Lie observed an ascending degeneration of the bundles of Goll and Burdach, and in the posterior roots there were degenerative changes and atrophy of individual fibres. In the inter-vertebral ganglia there was vacuolization of the ganglion cells, which contained large numbers of bacilli. The changes in the peripheral nerves Lie connects inseparably with the skin lesions. The dissemination of the bacilli, in his opinion, proceeds from the periphery toward the centre, and in none of the cases could the opposite be demonstrated. However, though he regards the ascending character of the neuritis as the rule, he is very reserved as to final conclusions, emphasizing the importance of carrying out investigations in the early stages of the disease, when the picture of the early development of the pathological process must appear more clearly.

"This process, according to Lie, is concentrated in the nerve sheaths. Here he observed round-cell infiltration, with thinning and destruction of the neuro-fibrils and subsequent substitution by connective tissue. In the individual fibres there could be noted destruction of the myelin sheaths and swelling of the axis cylinders. Leprosy

neuritis is characterized, not by the destruction of the myelin sheath and the axis cylinder, but by marked thinning of the fibres. In spite of the fact that he had studied a large number of cases, Lie does not give a precise differentiation of the nerve changes in the nodular and maculo-anaesthetic types of leprosy."

His own study was made in 20 cases, of which 18 were nodular and 2 neural cases. His conclusions are as follows :

"In the nodular form of leprosy the peripheral nerves as well as other organs and tissues involved by the leprotic process show lesions characterized by the presence of numerous bacilli, and lepra cells containing bacilli, lipoids and hemosiderin. The maculo-anaesthetic form of the disease is characterised by the appearance in the nerves, as well as in other organs affected, of ordinary round-cell infiltrations containing small numbers of bacilli and hemosiderin. These bacilli are found in the nerves, evidently in larger quantities than in the skin lesions. In the ganglion cells of the intervertebral and sympathetic ganglia in nodular leprosy there occurs vacuolization of the cytoplasm, and quite large numbers of the leprosy bacilli are present in these cells. In the maculo-anaesthetic form no vacuolization or bacilli have been noted in the cases studied.

"In the nodular form the granuloma, which is rich in foamy cells that are but slightly or not at all capable of further differentiation, undergoes organisation very slowly, which explains the slow deterioration of the nerve trunks and the very slow increase of clinical manifestations on the part of the nervous system in this form of the disease. In the maculo-anaesthetic form the rapid invasion of the depths of the nerve trunks by the inflammatory infiltration, with subsequent rapid destruction of their fibres, is accompanied by the early appearance of clinical manifestations referable to the peripheral system."

He found no signs characteristic of leprosy in the brain and spinal cord.

La Lèpre à Madagascar is the subject of a brief paper by Marcel Advier. Official reports during several years enumerated 6,000 cases and he estimates that there are yet well over 3,000.

Gordon Ryrie describes the use of *dettol* by subcutaneous infiltration of a 30% solution in severe ulcerative reaction, with apparently highly beneficial results.

In the correspondence pages there is a discussion on a questionnaire: (a) whether tuberculoid leprosy should be classified with the neural type; (b) whether tuberculoid leprosy ever changes into the frank cutaneous type; (c) whether the reverse transmutation ever takes place. The opinions given by contributing authorities vary considerably. One of the chief difficulties is the definition of the terms used.

Leprosy in India, Vol. VIII, No. 3. July, 1936.

We reproduce in this number an original article by J. Lowe. An article by Dr. D. P. Dow describes the *Late*

Results of Nerve Decapsulation in Leprosy. He analyses 18 cases in which this operation had been performed. In the light of the results seen after 6 to 8 years he feels "justified in resorting to surgery only in cases of nerve abscess, and only exceptionally in these cases is it necessary to decapsulate the nerve. The best results are generally obtained by exposing the abscess, removing the caseous material, and closing without drainage. In all other cases of nerve enlargement, the practitioner will be well advised to cling to the less spectacular, but in the long run more satisfactory form of treatment, by medical means, for he will find that nerve decapsulation does not realise the hopes raised, and its end results are apt to be anything but satisfactory." A previous article is referred to appearing under his joint authorship with Narayan in the April, 1935, number of the "Leprosy Review".

Leprosy in India, Vol. VIII, No. 4. October, 1936.

An article appears under the names of J. Lowe and S. N. Chatterji upon *Some Causes, other than Leprosy, of Loss of Skin Sensation, Paralysis and Deformity.* We hope to reprint this in a later number of this journal.

R. G. Cochrane writes on *Leprosy in Children in Ceylon.* He examined a number of children with early lesions in 1933 and re-examined them after an interval of $2\frac{1}{2}$ years. Out of 61 children re-examined, 54% showed improved or stationary patches; in 13% they were very much improved or had entirely disappeared, while in 17% they had become worse.

An article by the 1931 Census Commissioner for India is reprinted. From this we quote the following:—

"The census figures are mainly important as an indication of distribution. On the day after the 1921 census, Dr. Muir asked 30 lepers who knew they were lepers, if they had been returned as such, and found that only two had been so returned. The census figures have also been used to estimate the actual number of lepers by computing a figure for the whole of India on the basis of the ratio found to exist in limited areas between the census figures and the numbers obtained by expert survey. This method is also liable to be highly erroneous on account of the very great variations shown in the ratio of census to expert survey returns for different areas. The figures resulting from survey are always higher than the census figures but the difference seems generally to vary from about 10 times the census figure downwards over large units. In very small units the excess is sometimes much greater, and a municipality in Malda district (Bengal), that of English Bazar, had a census figure of 3 and a survey figure of 67. On the other hand, the Census Superintendent for Bombay regards the inaccuracy of return as varying according to the incidence of the disease. He writes: 'The leprosy

returns in the Bombay Presidency vary in accuracy probably within two-thirds to one-tenth of the truth, the accuracy depending more than anything on the incidence of the disease in particular areas. Where the disease is widely prevalent it is not properly reported. Where it is only occasionally found there is no doubt the Census statistics are nearer the truth. In the Ahmednagar District the medical authorities believe that the Census statistics of leprosy are about two-thirds correct. In Bombay City the statistics are believed not to be more than one-tenth correct.' The 10 to 1 ratio is possibly the commoner; in one thana of Bengal a survey figure of 274 was returned against a census figure of 30, though three or four times the census figure seems more usual in that province, and in a taluk of Hyderabad State 538 against 53, but Dr. Lowe estimates the total number of lepers in the Nizam's Dominions as 60,000 against a census figure of 3,738."

Revista Brasileira de Leprologia, Vol. IV, No. 4. December, 1936.

Treatment of Leprotic Ulcers by Intra-arterial Injections by Dr. Renato Braga of Sao Paulo. After having obtained very good results by the use of intravenous injections of methylene blue in the prompt cicatrization of leprotic ulcers, the author decided to make experiments of intra-arterial injections of methylene blue in the treatment of ulcers among the patients of the Aymoré Colony. Some had used intra-arterial injections of mercurochrome 1%, but he in his first two cases used intra-arterial injections of methylene blue 1%, but later found the best injection formula in Goinard's preparation of Hydroalcoholic solution of gentian violet 1%. The author considers that the vaso-motor changes produced with periarterial sympathectomy from the interruption of the periarterial sympathetic, are exactly the same as those produced with intra-arterial injections from the simple stimulation of the periarterial sympathetic, *viz.* such modifications of the circulation and nutrition as favour the reparability of the ulcerous lesions. The author gives details of the successful cure within two or three months of seven very bad chronic cases of leprotic ulcer and concludes that his observations justify him in claiming the method of intra-arterial injections as the most effective and safest therapeutic measure hitherto known for the treatment of such cases.

Histopathology of the Mitsuda Reaction. Progressive and Comparative Study of the Tissue Reactions produced in the Different Clinical Types of Leprosy, by Dr. Salomon Schujman. The author has been especially interested in the investigation of the "leprolin" test in cases of tuberculoid leprosy, in connection with which he and other Argentine leprologists (Fidanza, Fernandez and Balina) have recently

been making some special studies. He noted that all the work hitherto published on the "leprolin" test had been in connection with the cutaneous and nerve types of leprosy, and so he proceeded to investigate it in a series of 40 cases of tuberculoid leprosy in his hospital at Rosario. He found that the test is positive in 100% of tuberculoid cases, with no exception, as in the nerve type of leprosy. This positivity in the totality of tuberculoid cases was later confirmed in a series of 50 cases investigated by him in the "Conde Lara" Institute of Sao Paulo, Brazil, as will be seen in the latter part of this article. He found that the test is *intensely* positive in 90% of tuberculoid cases. The intensely positive cases show a papular varying in size from a maize grain to a filbert, of a reddish colour, later turning yellowish, and then acquiring a lupus appearance, very similar to the papules and tubercles observed in real tuberculoid leprosy. The histological appearances were found also to be exactly similar, and by the side of the follicular foci were found large zones of necrosis and caseosis, similar to the condition observed in leprous neuritis of the caseous type.

The histological changes found in cutaneous cases were of a very different appearance from those found in the tuberculoid cases, whereas the pure nerve cases gave a very intense positive reaction to leprolin, with histological changes exactly similar to those produced by leprolin in the tuberculoid cases. This latter phenomenon makes the author take the view that the achromic maculae of nerve leprosy may be secondary to previous tuberculoid lesions, or that they may be trophic manifestations due to lesions of the tuberculoid type in the nerve trunks.

[Some of the findings in this paper confirm those appearing in the article on page 83, Vol. 5, No. 2, April 1934, of the Leprosy Review. Ed.]

The Problem of Leprosy in Argentina is described by Prof. Pedro L. Balina in the inaugural lecture of a leprosy course at the International Leprosy Centre of Rio de Janeiro on 13th July, 1936. He describes something of the activities of the Argentine leprologists of recent times from 1906 up to the present date in (1) intensifying the instruction in leprosy in the Medical Schools; (2) laying special responsibility on the dermatologists for keeping the sanitary authorities cognisant of the leprosy conditions; (3) bringing every influence possible to bear on the Government authorities in favour of an organised national campaign

against leprosy; and (4) educating the people, the inhabitants of the country, in intelligent ideas on the subject of leprosy, and the responsibility of the public to co-operate with the authorities in their campaign. The official figure given at the present time of the number of notified lepers in Argentina is about 3,000, but the author believes that the real number would reach to between 7,000 and 8,000. With the present population of 12 millions, the leprosy co-efficient in the Argentine would be a little over $\frac{1}{2}$ per mille. The geographical incidence of the disease is as follows: 88% of notified cases live in the territories situated in the basins of the great rivers: 11% in the far inland regions to the west of the rivers: 1% in the hilly districts towards the Andes. All the ordinary clinical types of leprosy are found, including the tuberculoid. About half the cases examined in recent years have been bacilliferous and half non-bacilliferous. Eight-tenths of the cases were from the poorer indigent classes of the population, two-tenths from the well-to-do classes. Abscess of nerves is very rare and pemphigous forms extremely rare. J. W. LINDSAY.