REVIEWS AND ABSTRACTS.

Leprosy in India. Vol. X, No. 4, Oct. 1938.

A. Speight writes on the *Serum-Formalin Reaction* and examines its correlation with the sedimentation test. He concludes that though the test may be of no very definite diagnostic or prognostic value, it does indicate changes in the serum of many leprosy patients.

J. Lowe writes on *The Leprosy Problem in Burma.* Apart from the Arakan Hill tracts, where the incidence is given in the census (probably mistakenly) as 4½ times higher than in Burma as a whole, the central dry zone has the highest incidence.

"It is very much more difficult to get an accurate idea of the incidence of leprosy than of the distribution of leprosy. Surveys carried out by the Special Leprosy Officer in three different areas have indicated an incidence of about 1.6% of population in these areas. Our findings made during the tour suggest that while in some parts of Burma the incidence of leprosy is no doubt much lower than this, in other parts of Burma the incidence is probably considerably higher . . . . . It is impossible to give any very definite opinion regarding the age distribution, but our work shows clearly one thing, namely, that the incidence of leprosy in children is very much higher than has been realised. Several times during our tour we visited villages where the headman had been asked to report the number of cases, and where a medical man had checked his report, but we found that the cases reported by both these officers were only the marked cases in adults, and that by examining village children we could find up to 10% of them showing signs of leprosy. The findings quoted indicate that the leprosy problem in Burma is a very serious one, there are probably large parts of middle Burma where the incidence of leprosy in villages averages 2 or 3%, or even higher. A great many of the patients are infectious cases, the disease is spreading as shown by the high percentage of children infected with leprosy. All this indicates a very serious public health problem."

Regarding the possible methods of control, Dr. Lowe writes:—

"The problem is a very great one, the resources are not very abundant. Nevertheless I think that a campaign against leprosy, properly planned and organised, might within a period of 10 or 20 years have a very beneficial effect. The only method of control of leprosy which is likely to meet with any success at all, is that of arranging for the isolation of infectious patients, particularly from children and young people. Other

measures, treatment clinics etc. are merely rather ineffective forms of leprosy relief, and can never control the disease. In the control of leprosy in Burma many different measures have to be considered. These include legal provisions, leper asylums, colonies, arrangements for village isolation, diagnostic and treatment centres, etc."

Among the measures suggested are the following:—

" Arrangements for notification of cases of leprosy should be made. At present the headman of the village is responsible for reporting cases of leprosy in the village, and this arrangement should be continued and more rigidly enforced . . . . There are at present several leper asylums in Burma which are isolating cases of leprosy at a cost of about Rs. 9 per head per month to the local and Government authorities. Most, but not all, the patients in these institutions are infectious cases and I think that these institutions should be used as far as possible for such cases . . . . I think that they should be maintained, but they might possibly be maintained at a smaller cost to Government and local authorities. . . . . One of the most striking and encouraging things about the leprosy problem in Burma is the cheapness with which leper colonies can be established and maintained. The cheapness of buildings of wood and bamboo, and of food in Burma makes this possible. Really good houses for 8 patients can be built apparently for about Rs. 400. . . . Another thing that seems clear is the willingness of many patients to be admitted to such colonies. I think there is no doubt whatever that a very sound policy of anti-leprosy work in Burma would be a development of these simple rural leper colonies. . . . To whatever extent the system of colonies is developed, the colonies can never provide for all the infectious cases of leprosy in the country. There already is in many villages an attempt on the part of the village people to isolate cases of leprosy, and this village isolation should be developed and encouraged, and possibly made compulsory."

Dr. Lowe also recommends that arrangements be made for treatment centres chiefly to facilitate the work of isolation, propaganda, etc., and for following up patients from the clinic to the village.

A second paper by J. Lowe is a *Note on Racial Variations in Leprosy with Particular Reference to Indian and Burmese Races.* In Burma there is a mixed population of Indians and Burmans living under the same climatic conditions. As there is a considerable incidence of leprosy, it is possible to make a comparative study of the disease in the two races. In the Rangoon Leper Asylum the percentage of lepromatous type cases (compared with neural) was 75 among Burmans and 39 among Indians; in the clinics the percentages of lepromatous cases were 56 and 31. In the villages of India the proportion of neural cases was found to

be three or four times as great as those of Burma. In the Rangoon Asylum, 71 per cent of Burman lepers and 40 per cent of Indians were under thirty.

"A considerable number of cases were seen in which the lesions were either 'reacting' tuberculoid lesions in which smears showed an abnormally large number of bacilli, or else were lepromatous lesions developing from a previously existing tuberculoid lesion. In addition, there were many patients in whom the lesions were definitely of lepromatous type, but the peculiarly localised nature of the lesions and their peculiar distribution, and the fact that involvement of cutaneous nerves supplying the lesions was found, indicated very strongly that these lepromatous lesions had developed from previously existing tuberculoid lesions. This phenomenon, tuberculoid reaction being followed by lepromatous change, is sometimes seen in Indians, but in Burmans it appears to be much more common. . . . It is in the lepromatous type of lesion that the differences between the Indian and Burman leprosy are most marked. In Indians, leprosy of this type is usually diffuse and not localised, and not infrequently there is infiltration of the skin of the whole body without the presence of definite nodulation anywhere. In Burmans, however, this is much more rarely seen, and there is a far greater tendency to the production of marked local lesions without any apparent general skin involvement. Even when there is such a general involvement, marked nodulation in certain sites is a striking feature of the disease. Such cases are sometimes seen in Indians, but not nearly so commonly in Burmans. The term 'nodular,' previously used of leprosy of the lepromatous type, is not open to much objection when applied to leprosy in Burmans."

Regarding the cause of this difference between the two types, Dr. Lowe writes:—

"When we try to give a reason for racial variations of leprosy, we step into the realm of conjecture for little is known of the subject. It has been suggested that climatic, social, economic and dietetic conditions may help to cause these differences. The influence of climate in producing these differences in Burma can be disproved by the fact that in this country, different races show leprosy in forms varying with the race, the climatic conditions being constant.

The diet of the average Burman is in many ways similar to that of the average Indian, being based on rice, but the average Burman seems to be better fed, owing probably to food being more abundant. Also Burmans, not being vegetarians, probably have a more balanced diet with a greater protein and fat intake. One peculiarity of the Burman diet is the consumption of 'nappi,' a stale fish product. (This fact reminds one of Sir Jonathan Hutchinson's theories in their various forms). It seems to me unlikely that diet is an important factor in causing racial differences.

The social and economic conditions of villages seem on the whole better in Burma than in India. The general health also does not seem to have any important influence on the problem. The great health problem of Burma is malaria, but, in the parts of Burma where leprosy is most common, malaria is less common than elsewhere.

Another possible cause of variations in leprosy in different races and countries is a variation in the pathogenicity of different strains of the causative organism. The evidence, however, is against this idea. Indians infected in Burma and other countries apparently develop the forms of leprosy characteristic of the disease in India. Thus it appears that the lack of resistance to leprosy of Burmans is racial and hereditary.

Regarding racial resistance to leprosy, little is known. Long endemicity of other diseases in any country is often followed by a gradual diminution in the incidence of the disease and in the severity of the symptoms. This is often attributed to the development of racial immunity. Can such a phenomenon be demonstrated in leprosy? It has been suggested that this is the reason why leprosy practically disappeared from most of Europe at the end of the middle ages.

The history of leprosy is uncertain, but it has been surmised that

leprosy originated in Africa and spread early to India, and later to the far east. It seems that there is a considerable evidence to suggest that in Africa and in India the disease is generally seen in a relatively mild form, but that as one travels farther east one sees the disease in forms steadily increasing in severity. These are suggestions and not really proved facts. Can these ideas be proved? Is it possible that in countries and peoples which have more recently been infected, the disease shows itself in its severer forms owing to the lack of time for the development of racial immunity?

On the other side, it may be argued that there is no proof that leprosy originated in Africa and spread to the far east via India; that leprosy has been prevalent for thousands of years in the far east, probably far longer than it was prevalent in Europe; and that racial immunity, if it occurs at all, had adequate time to make itself felt in far eastern countries. It may also be argued that in recently infected countries, e.g. Nauru, the disease does not necessarily appear in a severe form.

It must, however, be accepted that racial differences in leprosy are seen. It is just possible that a study of racial susceptibility in relation to the history of leprosy in the affected races may give interesting results."

Leprosy in India. Vol. XI, No. 1, Jan. 1939.

J. J. Joseph summarizes the *Factors Influencing the Incidence of Leprosy in the Madras Presidency* as follows:—

" The chief foci of infection in the Madras province are the north-east and in the south-west, the former coastal and the latter inland. A hot humid climate is favourable for the spread of leprosy, while a hot and dry or cold and damp climate is unfavourable; a high altitude and low vapour tension are also unfavourable for the spread of leprosy. Customs—chiefly caste and marriage—favour the spread of leprosy, and these help to account for the endemicity of the disease. Among those studying in schools and colleges, the incidence is highest among those below the age of 12, especially among those who belong to the ' scheduled ' classes. The nearer the villages are located, the larger the village population and greater the industrialisation and inter-village communications, the more the incidence. The financial status of the district is no criterion of the incidence of leprosy, but it is the economic condition of the labouring classes which appears to influence markedly the incidence of leprosy."

An article by J. Lowe and S. N. Chatterji deals with *Scarification, Tattooing etc. in Relation to Leprous Lesions of the Skin.* Leprous lesions often appear on the sites of old scars, tattoo marks, etc. While it is possible that this may be the result of inoculating the germs by means of dirty instruments, it is probably more frequently a localisation of a previous infection, due to damaging the skin. Scarification is a frequent household form of treatment of leprosy, but the lesion may later spread beyond the area scarified. Illustrations of several cases under these two categories are given.

International Journal of Leprosy. Vol. 6, No. 4, Oct.-Dec., 1938.

A. J. Leitner writes on *Leprous Ostio-arthropathies of the Foot.* He discusses the cause of decalcification and deformity of the bones of the foot. In three cases examined arteriography showed normal arteries of the foot; but the bones were decalcified

and deformed and in one case there was fracture of the calcaneum. The author suggests that the condition must be due to affection of the sympathetic nerves, causing contraction of the vessels. The ischaemia causes decalcification and osteoporosis, while pressure and tension on the weakened bone causes deformities, etc. He confirms his hypothesis by good results in one case after right femoral sympathectomy.

Novocaine Blockade in the Treatment of Leprosy is the subject of a paper by A. A. Vishnevsky, Jr. The author injects from 70 up to 150 c.c. of a 0.5 per cent solution of novocaine, either into the perirenal fascia (patient lying as for renal operation) or for circular blockade of the nerves of the extremities. The results are restoration of sensation, healing of lepromatous ulcers, diminution of swelling and tension of the tissues and general improvement. The author has used this method for two years in one hundred cases. He claims that the immediate therapeutic effect is more rapid than any other well known method of treatment. "All our patients had been subjected to different kinds of 'specific' treatments, but with less results than after the blockade."

F. Hayashi writes on *The Age Distribution Curve in Leprosy.* His investigation has been chiefly in Japan, but he also compares curves in Japan with those in India and Norway. He finds that at the onset of a leprosy epidemic the age curve is to the left and that as it declines the curve shifts to the right. The incidence among military conscripts was found to have diminished from 600 cases in 1900 to between 100 and 200 cases in 1935, but the number of lepers in the censuses had not similarly diminished. The author was surprised at this, till he prepared age curves which showed that younger lepers are decreasing, as is indicated by the military statistics, while the older ones are increasing. [This would be a useful line of investigation in other countries.]

P. D. Strachan writes on *Statistical Evidence Indicating the Predominance of Abortive or Stationary Leprosy in Basutoland.* This is summarised as follows:

"During ten years, 61 per cent of the untreated N1 cases of leprosy at the asylum appeared to undergo spontaneous arrest. In a thorough survey of a certain area made by Germond at the end of 1936, only extremely light cases were found, and these actually exceeded in number the total number of cases from the same area in the asylum, in all stages of the disease. If these light cases were all such as become progressively worse in the absence of treatment, we should expect the total number of surviving sufferers today to be from five to seven times as great as it actually is. The majority of early neural cases of leprosy either remain stationary or become spontaneously arrested. This fact is revealed by a thorough survey of the whole population in an endemic area and is marked in institutions in which all patients receive treatment."

J. R. Innes contributes a paper on *A Leprosy Survey in the Island of Malaita, British Solomon Islands.* A summary account of this survey appeared in *Leprosy Review,* Vol. IX, p.122-128.

A paper by W. Gavrilov and A. Dubois on *L'Infection Experimentale du Rat par le Bacille de Stephanski Observée en Belgique* is summarised as follows:—

"Our attempt to culture Stephanski's bacillus has resulted in micro-cultures up to the fifth generation, sometimes producing colonies just visible to the naked eye. The pathogenic character of the bacillus of Stephanski when inoculated into animals did not remain as classically described; it was difficult to preserve the infection and abnormal forms of the bacillus were evolved."

South America and Leprosy is the subject of an interesting seven page editorial by H. W. Wade. There is said to be no leprosy in Chile and very little in Peru, except in the Amazon basin where there are 150 patients in an asylum and probably more outside. Bolivia is said to have occasional cases on the Amazon side. Of the other countries, Ecuador may have several thousands; Colombia has 8,000 cases in three leprosaria and a possible total of 25,000 in a population of 8 millions; in Venezuela there are 1,000 patients in two leprosaria, only a minority of the total cases; in British Guiana about 700 lepers (2 per 1,000); in Surinam, 800 known cases (5 per 1000); in French Guiana, 200 cases (4 per 1000). "An interesting feature of these and similar regions is that the disease is said not to affect the primitive Indian population." In Paraguay there are said to be 2000 or more cases, and in Uruaguay, though the number is not known, more than 500 cases.

In Argentina, which is well within the temperate zone, the disease seems to be increasing rapidly, but the leading dermatologists have for years made earnest efforts to stimulate action, though the authorities have shown reluctance to do much about it. An official estimate is 8000 cases, but others state two or three times as many (2 per 1000). Only 300 of the most advanced cases are in institutions, and that through the aid of a woman's organization, the Patronato de Leprosos.

"Brazil is a conspicuous exception to the rest of the Continent, in that it is taking seriously its leprosy problems—said in one report to be 'admittedly the most pressing' public health problem in the country." The most recent estimates give 50,000 cases (more than 1 per thousand). "The northern focus (Amazonas, Acre, Parâ and Maranhao), together with the Guianas, Venezuela and Colombia, constitute the great tropical leprosy area of South America." The anti-leprosy activities, as in Japan, are partly Federal and partly State; in some of the least developed states only Federal, while the state of Sao Paulo accepts little such

aid. The credit of the Federal action is largely due to Prof. Ed. Rabello and Dr. H. C. de Souza-Araujo. It is estimated that the country needs accommodation for some 240,000 cases, whereas in 1936 only 10,000 were isolated. In Rio de Janeiro there is the Centro Internacional de Leprologia, organised in 1934 by the Brazilian Government and the League of Nations, with financial assistance from Sr. Guilherme Guinle, where much research and teaching is done.

"In the Federal District there are 150,000 lepers now known, with presumably an equal number not known, about one-half of the total coming from neighbouring states. The Leprosarium can accommodate only a part of the open cases. For all of the others, the city has been divided into twelve districts and at a centre in each of them treatments are given and the patients are recorded and supervised by visiting nurses in a manner more thorough than the writer has ever seen elsewhere. Last June there were 639 patients, mostly non-contagious, on the nurses' visiting lists. It is from among such non-isolated cases that are drawn most of those that are studied at the Centre. . . . In Sao Paulo, wealthy when the coffee market was good, there are some seven million inhabitants and more than 11,000 known lepers, of whom over 6,500 were in segregation in 1937. To cope with the problem there was created several years ago the Departmento de Prophylaxia da Lepra, headed by Dr. Salles-Gomes. This department is unique in several respects, one being that it is independent of the health service. It controls the five leprosaria (one in each of the leprosy districts into which the state is divided), the two preventoria for the children of lepers, a creche in the city for young infants, and the numerous dispensaries. . . . With regard to the central organization of the department, there are three distinct units in the city of Sao Paulo: (a) The central office, with a truly remarkable system, its own supply department and even its own engineering staff for construction work; also a couple of lawyers who take care of the personal difficulties of segregated patients. Records of every one of the 14,000 lepers that have been registered since 1924 are immediately available, and also cards for the 28,000 and more contacts that have been examined in late years. (b) The laboratory section, for routine bacteriological, pathological and related work, supported in part by a charitable organization. Four girls are required for the preparation of histological slides alone, and five or six people do only smear examinations. The antileprosy drugs for the state are prepared here, and there is a well-equipped department for gross and micro-photography. The whole is decidedly impressive, and yet it is pointed out to the visitor that this is essentially a routine laboratory; funds have already been secured to build a research institute at the nearest of the leprosaria. (c) The library, where surprise becomes astonishment. Here is a collection of leprosy literature that unquestionably is without equal in any similar special unit anywhere. A keen librarian has been given a free hand in acquiring leprosy items and it would be difficult to name one that is not available. A card index contains references for all pertinent articles written by present-day workers. At intervals, members of the department staff receive from the library mimeographed lists of titles in current literature, and any article that a field man wants to read is copied for him by typewriter—no publication being allowed to leave the library."

Dr. Wade finishes his editorial by stating that Brazil can no longer be left out of the itinerary of the traveller who sets out to acquaint himself with the men and materials in the leprosy centres.