

REFERENCES

- (1) BUU-HOI, NGUYEN-BA-KHYEN, and NGUYEN-DAT-XUONG (1955). Bulletin de L'Academie National de Medecine, 139, 275.
- (2) KONOPKA, E. A., GIST, T., EISMAN, P. C., and MAYER, R. L. (1955). Proc. Soc. Exp. Biol. & Med., 89, 388.
- (3) MAYER, R. L., EISMAN, P. C., and KONOPKA, E. A. (1953). Proc. Soc. Exp. Biol. & Med., 82, 769.
- (4) SCHWARZ, J. A., OWENS, G. J., and GIERSON, H. W. (1954). Tr. of the 13th Conference on the Chemotherapy of Tuberculosis, Feb. 8th, 1954, Veterans' Association, U.S.A.

Fig. 1. Diffuse lepromatous leprosy of moderate severity in a male aged 18 years. 6 months history. Smears 4+. Biopsy taken from the back before starting SU 1906 treatment, and illustrated here, shows extensive infiltration in the upper layers of the corium. The characteristic foamy appearance of the granuloma and the sub-epidermal clear zone are well illustrated.

Fig. 2. Six months later, biopsy at a site immediately adjacent to the former one shows marked shrinking of the granuloma, leaving scattered small foci such as that illustrated here. Foci are localised around blood vessels, which are dilated, and their cellular elements are frequently more sparse than in the illustration. Smears still 3+, but bacilli show degenerative changes in marked degree.

Fig. 3. Advanced lepromatous leprosy in a male aged 25 years, with enormous numbers of bacilli at every site tested in spite of a history of only 8 months. Biopsy from the right thigh taken before starting SU 1906 treatment shows typical lepromatous infiltration involving the entire thickness of the corium.

Fig. 4. Biopsy taken seven months later from a site immediately adjacent to the former one shows very marked resolution, the infiltration persisting only as multiple small foci, vascular, and with relatively few cellular elements. They may be seen on either side of the hair follicle illustrated here, their paucity in this situation indicates the degree of resolution which has occurred. Smears still read as 4+ and show some normal looking bacilli but much acid fast debris.

REVIEWS

International Journal of Leprosy, Vol. 23, No. 3, July-Sept., 1955.

The original articles are as follows:—

J. M. M. Fernandez writes on *Influence of the Tuberculosis Factor on the Clinical and Immunological Evolution of Child Contacts with Leprosy Patients*.

The evolution is described of 83 children who had lived in contact with open, lepromatous patients, and whose exposure to infection was therefore indubitable. Their ages varied from 1 month to 15 years when first seen. For purposes of comparison they were divided into 3 groups: (1) A group of 28 (tuberculin reactivity immaterial), who were vaccinated with BCG, 22 of them by injection and 6 orally. (2) A group of 32, tuberculin positive, who were not vaccinated with BCG. (3) A group of 23, tuberculin negative, who were not vaccinated with BCG. Of the first group 32 per cent developed leprosy, 8 of these being tuberculoid and 1 indeterminate. In the second group 41 per cent developed

leprosy, all but one indeterminate case being tuberculoid. In the third group 43 per cent developed leprosy, 5 being tuberculoid, 2 indeterminate, and 3 lepromatous. The significance occurs in the presence of the lepromatous cases in the third (tuberculin-negative group), as against their absence in the tuberculin-positive group. There is also a marked relationship between the positive Mitsuda reaction and the positive tuberculin reaction in the first two groups. The author concludes that if BCG is effective in the prevention of leprosy, and if vaccination by mouth is innocuous, he would advise mass oral vaccination of the people in an endemic area but, failing this, priority should be given to lepromin-negative contacts with open leprosy.

* I. G. Ignacio, C. A. Palafox and F. A. José write on *The Results of Repeated Lepromin Testing in Children*.

Fifty small children of leprous parents in the Culion Leprosarium had with one exception been separated from their parents at birth, the exception being a child who had been exposed to contact with his mother for some hours. The lepromin reaction was tested four times, twice in 1949 and twice in 1950. A fifth test was made in 1951, but only in 32 of the children. A final test was made in December, 1951, about 2½ years after the first trial, in the 47 children still available. In the first test only 22 per cent were positive. In the third test 96 per cent reacted. In the fourth all reacted, many of them reacting intensely although less than a year old. After the sixth lepromin test there remained 12 children whose reaction had not passed the 2+ grade. Ten of these who had negative tuberculin reactions were vaccinated with BCG in April and July, 1952, using the multiple puncture technique. When the lepromin test was done a seventh time, 2 months later, the reaction had not increased from 2+ in any of the 10 children.

Experimental Vaccination with BCG in the Prophylaxis of Leprosy is the subject of a paper by R. Chaussinand.

In order to test the effect of BCG vaccination in the prophylaxis of leprosy, two methods may be used: (1) Oral vaccination of 50 per cent of all new-born children comparable as regards age and sex, the remaining 50 per cent being used as controls. (The vaccinated and controls would be comparable as regards age and sex.) (2) Vaccination intradermally with BCG, using only those non-reactive to lepromin and to heat-killed virulent Koch bacilli. While important results might be obtained by the former method, the latter is preferable, as those affected by Koch's bacillus and

most of those affected by Hansen's bacillus would be eliminated. In order still more to eliminate those previously affected by the latter bacillus, only infections (excepting those in the new-born) that appeared more than 3 years after the beginning of the experiment should be taken into account. It is also regarded as likely that intradermal administration of BCG would be more effective than oral because the leprosy bacillus has a particular affinity for the skin; and this is confirmed by experiments in guinea-pigs, where with equal doses of BCG the intradermal route gives rise to more marked reactivity to lepromin than intraperitoneal vaccination. Detailed statistical analysis of the results would be made.

F. Amendola describes the profound difference in *eyes, nose and throat complications* of leprosy since the introduction of sulphone therapy. Formerly Pinkerton writing of the Hawaiian Islands said: "all patients sooner or later are affected with ocular complications." To the specialist the incipient invasion of the episclera always heralded "frank lepromatous involvement and certain blindness." With sulphone treatment, leprosy of the eye is now limited to invasion which occurred before sulphone therapy was begun. Surgery of the eye in patients treated with sulphones offers a better chance of restoring the transparent media. In the State of São Paulo 235 tracheotomies were performed for lepromatous obstruction of the air passages between 1933 and 1948; between then and 1955 none have been necessary.

S. G. Browne gives the results of treatment of 67 patients with *Sulfon-cilag*. The types of disease were: 57 lepromatous, 9 tuberculoid and one indeterminate. Chemically, it is the sodium salt of 4-carboxymethylamino-4'-aminodiphenyl sulfone, and it is freely soluble in water. It was administered in tablet form. The dose was 200 mgm. thrice a week, but varied with the size and condition of the patient. Later, doses of 100 to 200 mgm. were given daily. The results are shown in tabular form after 12 to over 36 weeks' treatment. All the tuberculoid cases progressed towards complete healing. "Lepromatous cases showed, in the main, both clinical and bacteriological improvement during the period of treatment. . . . It suggests that if therapy could be continued for longer than was possible in the cases under review, it would result in both bacteriological and clinical amelioration."

S. Schujman took a group of 40 cases of tuberculoid leprosy, 28 of them strong reactors to lepromin and 12 weak reactors. He made simultaneous *lepromin tests with diluted and undiluted antigens*.

With the integral (Mitsuda) antigen the strengths were 1 : 20, 1 : 100, and 1 : 750; with Dharmendra's bacillary antigen they were 1 : 1,000 and 1 : 5,000. It was found that with strong reactors the reactions were similar, but a little weaker with the more dilute antigens; while with the weaker reactors there were often no reactions with the higher dilutions. It is recommended that high dilutions should be used only in patients who have already been found to be strong reactors.

H. Floch, because of the difficulty in obtaining sufficient suitable material for preparing *lepromin antigen*, used a 1 in 750 dilution. To enhance the strength of the reaction 12 per cent glycerine and 2 per cent paraffin were added to the diluted antigen. This addition increased the strength of the reaction in 50 per cent out of 114 cases. The reaction was less in only 9. A 50 : 50 mixture of a 1 in 375 diluted antigen with a 1 in 20 normal skin suspension gave stronger results in 76 per cent of 79 positive reactions.

R. Kooij writes on *The Value of the Histological Criterion for the Classification of Leprosy*.

With a view to testing this, skin sections from 45 cases of leprosy were sent to 7 different pathologists for reports. Of these 45 cases, 9 were classified clinically as lepromatous, 18 as border-line and 18 as tuberculoid. There were 33 reports of the 9 lepromatous patients, but only 12 of these were diagnosed as lepromatous, 8 being tuberculoid, 6 mixed, and 7 non-specific. For the 18 border-line cases there were 87 reports, giving 18 lepromatous, 26 mixed, 21 tuberculoid, and 22 non-specific. For the tuberculoid specimens there were 77 reports, 37 giving tuberculoid, 16 mixed, 22 non-specific and 2 lepromatous. It is concluded: (1) That different cases of the same type of group may show different histological pictures. (2) That investigators differed in their opinions on the same section. (3) That one cannot exclude the diagnosis of leprosy on finding a non-specific histological picture. (4) That when the histological picture is not in agreement with the classification based on other criteria, one does not necessarily have to change the classification. (5) That agreement of the histology with the clinical criteria of a definite type or group of leprosy gives support, and should be helpful in doubtful cases.

A Bridge of Compassion, by A. Donald Miller. 150 pp. 1955.

This is the title of a book published by the Mission to Lepers and written by its General Secretary, Mr. A. D. Miller. The work

of the Mission is the Bridge of Compassion, and it is described as having three arches: those of physical healing, human fellowship and eternal hope.

First is described the origin of the Mission from small beginnings some 80 years ago. Now "its work extends to twenty-four countries. It acts in co-operation with forty-nine missionary societies and the churches that have been established through them; it sees with gratitude the changing attitudes of Governments and peoples from paralysed fear or indifference to constructive reasonable service."

Under the "Arch of Physical Healing" are described the great advances that have been made in the treatment of leprosy in recent years, so that even in the advanced stages of the disease recovery can be expected.

Then there is the "Arch of Human Fellowship." The inter-denominational nature of the Mission, and the common appeal which this cause makes to all Christians of whatever denomination, creates a fellowship which bridges across all minor differences.

The third is the "Arch of Eternal Hope." Many interesting stories are gleaned from Mr. Miller's recent tours in Africa, India and the Far East. But the sad tale is also told of the plight of post-war Korea, where leprosy is one of the most urgent problems.

The last chapter speaks of the "Bridge Beyond." An island leprosarium in Japan is described where a small but increasing number of patients are Christians. The pastor, himself a patient, described their Church as "a fellowship which began with thirty members when the church was built. Now we are over a hundred. Soon the church will not be large enough to hold us. The message of Christ is drawing in other patients and its influence spreads through the whole leprosarium."

The final paragraph speaks of the Latin Vulgate version of Isaiah's record about the Messiah: "*Nos vidimus eum quasi leprosum*" (We beheld Him as leprous). "Yet in that tortured and despised body flowed the very life of God for man."