

CURRENT LITERATURE

It is intended that the current literature of leprosy shall be dealt with in this department. It is a function of the Contributing Editors to provide abstracts of all articles published in their territories, but when necessary such material from other sources is used when procurable.

SAGHER, F. Leprosy. (A review of the literature from late 1948 to 1950.) Internat. J. Dermat. (New York) **103** (1951) 286-318.

This is an excellent review of the work done during the period 1948 to 1950, with 399 references. The material is divided into the following phases of study: etiology; serology and biochemistry; animal experiments (transmission, epidemiology); diagnosis and clinical considerations; pathology; treatment; history, statistics, control, prevention and classification.

—F. A. JOHANSEN

PIZZI, M. Prevalence of leprosy in the world. Epidem. vital Statist. Rep. (W.H.O.) **5** (1952) 263-282.

This publication was prepared by the chief of the Section on Morbidity Statistics, WHO, having in view the crucial question involved in planning for leprosy control, namely, how many cases are there in the world and in each country. The data presented, obtained almost entirely from the literature, are arranged primarily by regions (Africa, Asia, etc.) and then by countries or territories, and are given in briefest fashion. The author deplores the paucity of figures on age and sex distribution and on case types, pointing out that the lepromatous cases are those which are most important in control. He compares certain statistics for Africa, where the lepromatous cases are around 20%, and for South America, where they are commonly above 50%. There is no summary tabulation, nor could one be made of the data, but it is said that a little more than half a million leprosy cases are known to the health services of 85 countries and territories, and that this number represents no more than 25% of the most conservative estimate of the number of cases in the world and about 7% of the highest estimate. "The truth . . . is that we really do not know with sufficient approximation what is the actual extent of leprosy prevalence in the world."

—H. W. W.

[FIJI] Medical Department, Colony of Fiji. Annual report for 1950. (6) Leprosy, p. 4; Appendix III, Fiji Leprosy Hospital, Makogai, pp. 15-19 (C. J. Austin). Legislative Council, Fiji, Council Paper No. 2, Government Press, Suva, 1952, 89 pp.

Of the 75 new cases admitted to Makogai during the year—not counting 5 which proved not to be leprosy—Samoans again showed a high proportion of lepromatous cases (13 of 18) as contrasted with Tongans, their geographical and racial neighbors (3 of 6). In total, 65% of the cases were lepromatous; of the main racial groups: Gilbert Islanders, 77.2%, Samoans, 75%; Indians, 73.1%; Cook Islanders, 50.9%; and Fijians, 48.3%. In total, 539 patients were on sulfone treatment, of which 92 were unable to take more than minimal doses owing to continual reactions, lowering of general health, psychotic manifestations or drug rashes, while 30 others were completely intolerant. There has been a steady rise in the percentage of "im-

proved" cases, including "arrested" and "quiescent," since the start of sulfone therapy: 55.1% in 1946, 55.9% in 1948, 63.9% in 1949, and 71.9% in 1950. Discharges totalled 37 cases, 11 of which had been lepromatous. Of the 30 deaths, 7 were certified as due to advanced leprosy, 2 to amyloidosis, and 11 to renal complications, two-thirds thus more or less directly due to the leprosy infection; 5 were due to tuberculosis, and 3 to cerebral accidents. Rev. Mother Agnes, M.B.E., retired at the age of 80 after 34 years of devoted services.

—C. J. AUSTIN

[BELGIAN CONGO] Rapport Annuel de la Direction Générale des Services Médicaux, 1951. (Mimeographed.)

In this report, which follows the same lines as that of the previous year [see the JOURNAL 20 (1952) 145], it is stated that despite the encouraging progress of treatment the situation does not yet permit discontinuing isolation of patients. The present tendency, justified by a slow but definite progressive evolution of the native mentality, is to group them in large communities of isolation within which are integrated centers of segregation, treatment, rehabilitation and research, supervised by a stable and specialized medical personnel. At present there are 3 well-organized centers of this sort in the country, while 10 others are projected. In the 163 various leprosaria there were 25,954 patients (against 22,037 last year); 8,925 new ones had been diagnosed. The total number of cases under treatment at the various medical posts and by itinerant services was 102,510.

—H. W. W.

6 MONTESTRUC, E. L'Institut Pasteur de la Martinique en 1951. (Deuxieme mémoire.) [The Institut Pasteur of Martinique, 1951; second report.] Arch. Inst. Pasteur Martinique 5 (1952) Nos. 3-4.

At the Institut, and at the Emile Marchoux dispensary, where a total of 1,585 examinations of materials from leprosy patients were made, 110 new cases were diagnosed, 17 L, 16 T, and 77 I; 38 (34.5%) were under 20 years of age. This total is 17 less than in 1950, but much more than the average of 65.3 during the last 13 years. However, it is believed that this indicates an increase in activity in case finding rather than of prevalence. The total number is estimated at 1,100, which would give a prevalence rate of 4.4 per 1,000. Speaking of the number of persons with leprosy whose occupation brings them into contact with the public, regret is expressed that the law which would fix their status, placed in the office of the National Assembly more than three years before, had not yet been passed by the parliament.

—H. W. W.

6 MAUZÉ, J. Rapport sur le fonctionnement technique de l'Institut Pasteur de la Guadeloupe en 1951. [Report of the Institut Pasteur, Guadeloupe, 1951.] Arch. Inst. Pasteur Guadeloupe 2 (1952) No. 2.

During the year 44 new cases were registered, 36 L, 3 T and 5 I; 29.5% were in children, regarded as a high proportion. There were 350 cases under treatment at the dispensary of the institute, which also had supervision of those treated at the other dispensaries; the total number is not given. Schools remain an important focus, for infectious children are liable to change schools, and the schools cannot be properly supervised in this respect. A proposal to establish a *hôpital-hospice hansénien*, a project initiated in 1948, is being put forward. Unfortunately, it is stated, the recommendations of the Havana congress were not followed in the planning, and the site that was chosen is regarded by the writer as unsatisfactory

because of the geography of the region and the distance from the main towns. —H. W. W.

DINIZ, O. Censo de lepra na região Centro-Norte. [Census of leprosy in the north central region.] *Arq. mineiros Leprol.* **12** (1952) 56-64.

The data presented show that new cases had been found in all but 28 of the 128 municipalities in this area. Belo Horizonte, with 276 new cases occurring between 1945 and 1950, is the largest focus. The gross statistics are: 1926-1938, 1,501 cases; 1938-1944, 2,381 cases; and 1944-1950, 1,366 cases; total, 5,248.—[From the English summary.]

DINIZ, O. Censo de lepra na region sul de Minas. [Census of leprosy in southern Minas Gerais.] *Arq. mineiros Leprol.* **12** (1952) 115-123.

From 1926 to 1938, 714 cases were registered, and between 1938 and 1947 the number increased to 4,312. In 1950 the highest number was reached, 5,713 cases representing 2.81% of the population. The censuses were not complete.—[From the English summary.]

MISSION TO LEPERS. The Spark of Grace. Report of the Council for 1951.

In China, early in 1951 aid was being given to some 20 places, including some aided by the American Leprosy Missions until that was prohibited by the authorities, but by the end of the year only the old home at Hang-chow and the nearby agricultural colony at Zang-peh, both under Dr. James Maxwell, and apparently also Pak-hoi, could be helped. Increasing interest centered on the new leprosarium, Isle of Happy Healing, being developed by the Hong Kong Auxiliary. In India, among other things, a home had been established at Gorakpur, U.P., under the auspices of the Gandhi Memorial Fund. In Madras State the government gave notice that it would help only institutions with none but infectious cases, so the Mission's homes were compelled to forego such aid because they had some "burnt-out" cases which could not be turned out. In West Pakistan the home at Rawalpindi was much overcrowded because of the influx of refugees from Kashmir. In Africa, the Mission was giving aid to 31 places in 12 countries. Rapid progress was being made in many countries there, with increased recognition of the governments that they must participate, by aid or independently. With the greatly increased cost of essential commodities, the Mission's ordinary expenditures had more than trebled since 1941, to £223,908, plus £25,830 for a special legacies account. The American organization had continued its aid in the amount of £25,123 to certain cooperative activities.

—H. W. W.

MISSION TO LEPERS, HONG KONG AUXILIARY. Annual report for 1952.

This booklet, one of whose illustrations shows the Hay Ling Chau hospital island with Hong Kong in the background, an hour's motorboat trip to the NE, tells of much development in the past two years. The resident staff includes Dr. N. D. Fraser as medical superintendent, 2 Chinese doctors and five other Europeans. The number of patients is 301, perhaps to be increased later to a maximum of 500, beyond which the locale would not permit going. In the carpentry shop patients make many of the things needed, another group provides the fish required, and gardening and pig-raising are engaged in. A hospital center, to be named as a memorial to the late James L. Maxwell, is under construction. The institution is supported partly by the Hong Kong government and partly by money raised

privately; the leprosy missions have contributed materially. The Sandy Bay place at Hong Kong, set up temporarily in 1950 for the 160 patients then in the Tung Wah Hospital, has now been closed, and a clinic in the city has been opened for treatment of outpatients and related purposes.

—H. W. W.

COCHRANE, R. G. Report on visit to Nigeria, 15th March to 1st May 1952. British Empire Leprosy Relief Association. (Mimeographed.)

In the leprosy work in Nigeria [see the JOURNAL 20 (1952) 175-184] conditions vary greatly in different areas, from remarkably encouraging in some to less satisfactory in others. Little can be said here of the author's many observations of side-effects of drugs used, and only the principal centers visited can be mentioned. Because each of the main political subdivisions—the Eastern, Western and Northern Regions—now has its own parliament and ministers and is nearly autonomous, the Director of Medical Services has only advisory powers and to him Dr. T. F. Davey, Advisor to the government of Nigeria, tenders recommendations. Each regional director of medical services decides how he will adapt to local conditions the general principles of the antileprosy campaign. The Leprosy Service has financial difficulties, and more with respect to personnel despite the considerable aid given by Belra, and this also applies equally to the mission institutions. *Eastern Region:* In Owerri Province, where is located the Uzuakoli settlement with its therapy research center (Dr. Lowe), the work is most advanced. The leprosy situation here—and also in the neighboring Onitsha Province to the north—has been brought under control relatively rapidly, with material reduction of the prevalence of the disease. This has resulted largely from the organization by Davey of the "clan" system of segregation centers, which is actively supported by the people. The duties of the area superintendents, of which there are four in the country, are apparently exemplified by those of the one stationed at Uzuakoli. These consist of the general medical work of the settlement itself and over-all direction of the leprosy work in his district, including supervision and treatment of patients in the several segregation centers and dispensaries. Such circumstances result in dependence upon DDS, which is cheap and easily administered by the native inspectors—and on this account a black market tends to develop. At Uzuakoli, as a result of the increasingly successful outcome of leprosy control measures in this area, the number of lepromatous cases available for research purposes is diminishing; lepromatous ones are only about 10%, and the child rate is probably less than 5%. One center in the Bende division has actually been closed, no longer needed. This improvement was attained before large-scale sulfone treatment. Again at Oji River, in Onitsha, the author was struck by the relative mildness of the disease and the low incidence of lepromatous cases among the nearly 1,000 patients in the settlement; it is in this area that DDS has been used most extensively. In Ogoja Province, farther to the east, conditions are quite different. Here the lepromatous rate is high (30%-40%), and the situation on the whole is far from satisfactory in part because of paucity of staff. Farther south, in the large mission colony at Itu, in Calabar Province, not far from Cameroons whence some of the patients come, there are 2,000-3,000 leprosy patients but only one physician, who also has the responsibility of a general hospital. Here the writer saw need of new objectives for this institution, including the development of a training center for

mission doctors and nurses. *Western Region*: There is no section under this head, but a visit was made to the Ossiomo colony, in Bennis-Warri Province, which is west of the Niger. Here the situation was found to be much more serious than elsewhere, more urgent even than at Ogoja; only the fringe of the leprosy problem has been touched. Here, too, the lepromatous rates are high, but many of the cases cannot be admitted to institutions for lack of funds. Where the lepromatous rates are so high, DDS treatment has to be given very carefully, numerous cases showing psychoses, dermatitis, hepatitis, or albuminuria or urobilinuria. In a series of cases treated by injections of aqueous sulphetrone these conditions had not appeared. *Northern Nigeria*: In this region, where again the lepromatous rate is high, the people are relatively indifferent to leprosy and have not yet accepted local (village) segregation. Consequently, the work of the several actual leprosaria needs to be strengthened, and priority should be given open cases. DDS treatment had only just been started in some of the places here.

—H. W. W.

DOULL, J. A. Trip to Japan, Philippines, Federated Malay States and Singapore, Indonesia, India, Greece and England, September 8-December 16, 1952. Leonard Wood Memorial, Washington, D. C., 1953, 10 pp. (Mimeographed.)

This tour was made after the conference held in Japan in September [see the JOURNAL 20 (1952) 385-392]. High points regarding other places visited are noted here. *Taiwan*: Old estimates of total cases vary from 1,000 to 4,000 in a probable population of 8 millions. In the government leprosarium (Lo-Seng, formerly Rakusu-en) there were 554 patients, and 37 at the Protestant hospital (Lo-San Yuan, or Happy Mount). In the former, 67% were Taiwanese, the others military or civilian "mainlanders"; one-third were tuberculoid or "neural"; only 2 or 3 were under 15 years of age, indicating many undiscovered cases. There were 5 physicians here, and 1 (American) at the other place. In Taipeh there is a foreign-supported Babies Home with 10 infants. Various recommendations are mentioned. *Hong Kong*: The recent developments are described [see another abstract in this issue]. *Philippines*: This section reports briefly on the Memorial work. One point regarding that of the epidemiology unit (Dr. R. S. Guinto) is that early skin lesions of tuberculoid aspect may be so transient that frequent examinations of the population would be necessary to determine their frequency. *Federated Malay States*: Besides the Sungei Buloh Settlement near Kuala Lumpur, with 2,413 patients, there is a small leprosarium with ± 300 patients at Johore Bahru, near Singapore, and one with ± 400 patients at Palau Jerejak, near Penang. Sungei Buloh is one of the largest and best-managed leprosaria in the world, although there are only 3 physicians, including Dr. B. D. Molesworth, the superintendent. *Singapore*: The leprosarium here, with ± 700 patients, is well-managed but a full-time medical superintendent is needed. *Indonesia*: Here, with $\pm 22,000$ registered cases out of an estimated 75,000 in more than 75 millions population, there are 5 full-time leprologists—3 in Djakarta, including Dr. R. Boenjamin, head of the service, and 2 in Central Java centered at Semarang—although others are participating on a part-time basis, including some Dutch and German physicians. Near Djakarta there is an unsatisfactory leprosarium, established in 1943 by the Japanese, with 228 patients, but a new and good one for ± 500 patients is nearing

completion. At the Central Institute one water buffalo with lepra bubalorum was seen. *India*: In brief visits to Calcutta and Delhi, it was learned that the federal health department has little to do with India's vast leprosy problem, control being primarily a responsibility of the various states. Few of them have qualified leprosy officers on the central staffs, and those few are handicapped by lack of funds. Certain proposals were discussed, including the appointment of a qualified foreign leprologist—if an available one can be found—to the WHO Regional Office for two years. The work of the Gandhi Trust is mentioned and also the proposed federal research institute at Chingleput. *Greece*: The estimates range from 1,000 to 3,000 (population 7,600,000); there are 887 patients in the leprosaria and 220 on leave. [The figures of 523 at Santa Barbara in Athens, 261 at Spinalonga in Crete, 31 at Chios, and 72 at Samos are identical with those recorded by Dr. E. Muir after his visit in 1951 (see the JOURNAL 19 (1951) 478-482).] The first two of these institutions were visited and are commented on. Much-criticized Spinalonga was found to be a most unpleasant place, reminiscent of a fortress prison, the patients highly dissatisfied and not without reason. Among other recommendations made were the appointment of a full-time leprosy control officer for the country, and the discharge of negatives from the leprosaria to make space. The latter was agreed to by the director general of health. The recommendations made by Muir have not been acted on, but with the advent of a new government improvements are to be hoped for. *London*: The Jordan Hospital, Redhill, Surrey, opened August 15, 1951, was found to be an excellent cottage institution with 19 patients, of whom 17 had been born abroad and the other 2 had spent time in endemic areas. There are said to be ± 150 cases on the register of the Ministry of Health. —H. W. W.

HENS TIENDA, L. and FERNANDEZ NAFRIA, A. Epidemiología, lucha social y profilaxis de la lepra. [The epidemiology, social campaign and prophylaxis of leprosy.] *Med. colon.* 19 (1952) 462-483.

The leprosy census in Spain made by Cordero Soroa in 1948 gave 1,510 cases and 6,344 contacts. These numbers have now risen to 2,243 cases and 10,682 contacts. In buildings now in existence or under construction in the country there are accommodations for 1,600 patients: Fontilles, 400; Trillo, 300; Toen, 200; Tenerife, 500; Las Palmas, 100; Santiago, 40; Barcelona, 30; Granada, 30. By the time of the congress to be held in Madrid in October 1953 there will be 2,500 beds, which is considered adequate to deal with the situation. There is a danger in well-to-do patients with many bacilli who undertake to isolate themselves at home but who, because of social and other complications, are liable to make contacts and spread the disease. The authors believe that all open cases should be isolated in institutions.—[From abstract in *Trop. Dis. Bull.* 49 (1952) 871.]

GYÖRKÖ, A. C. La lepra en el archipiélago Canario. (Datos históricos y su distribución geográfica.) [Leprosy in the Canary archipelago; historical data and geographical distribution.] Las Palmas de Gran Canaria, 1952, 31 pp. + 8 annexes, illustrated.

This document, presented at the recent dermatological congress in London, has a lengthy summary in English from which the following condensation has been made. The Canary Islands, area 7,273 sq. km. and population 766,862, are mountainous and volcanic and without rivers, the cli-

mate is subtropical and with scarce rains. The prehistoric aborigines, of the Guanche race (3 types of Cro-Magnon: Guanche, Semita and Negritico) did not suffer from leprosy. The Canaries were visited by all the navigating nations of ancient times. The Norman nobleman John de Bethencourt, who arrived there in 1405, is believed to have had the disease. It was introduced before the conquest by Castille (1483-1496). The first hospital of St. Lazarus was founded at Las Palmas in 1556 by royal charter of Phillip II, was destroyed during a Dutch invasion in 1559, and was reconstructed in 1614. By 1842 it had become almost a ruin, and in 1844 the patients were removed to an ex-Dominican convent. In 1932 they were removed to the newly-opened Leprosaria Regional de Canarias, which started with 43 patients. Various figures for recorded cases, from 1788 to 1948, are given. Those of the official census of 1950 are: 253 cases (155 in Tenerife and 98 in Las Palmas), with 78 hospitalized. Sufferers and relatives connive to keep cases secret. An unofficial estimate is 1,430 cases, or 1.86 per 1,000. Nothing is done for the 59 known children of interned leprosy parents, nor for the children living in leprosy families. There is also no antileprosy social organization similar to those operating in Spain. The Tenerife leprosarium should be opened without delay, with the 200 bed capacity as projected, although even this is considered insufficient; a 300-bed sanatorium is required to combat leprosy successfully.

—H. W. W.

DE SOUZA-ARAUJO, H. C. A lepra em Portugal. Impressões do Hospital-Colônia "Rovisco Pais." [Leprosy in Portugal; impressions of the Rovisco Pais leprosy hospital.] *Rev. brasileira Med.* 9 (1952) 638-642.

Leprosy, first imported from Africa, is a very ancient scourge in Portugal. Even kings and queens have suffered from the malady. Between the 12th and 14th centuries there existed about 60 leprosaria (*gafaria*), the most renowned being the "Gafaria da Coimbra" inaugurated in 1211. Control work was started in the second quarter of the 20th century by Dr. Uriel Salvador. In 1932 the patriot Rovisco Pais left 20,000 escudos (about US\$1,000,000) and the rent of some properties for a model national leprosarium, and in 3 years this amounted to 61,000 escudos. With this money the national government established the "Hospital-Colônia Rovisco Pais," located at Tocha, Province of Cantanhede, which was inaugurated on September 7, 1947. It is one of the most modern and comfortable leprosaria in the world. Of the 1,670 recorded cases, 892 (481 males and 411 females) are now in the institution, and it is being enlarged to accommodate 1,000 patients. There are five resident doctors (Dr. Manoel dos Santos Silva, in charge), and other specialists visit the place once a week. About 500 patients are being treated in dispensaries. The estimated total for the country is 2,000.

—AUTHOR'S ABSTRACT

HUMPHRY, A. H. Leprosy among full-blooded aborigines of the Northern Territory. *Med. J. Australia* 1 (1952) 570-573.

Leprosy was introduced in the Northern Territory of Australia by Chinese coolies about 1874. It remained confined to the Pine Creek-Burrundie area until 1912, when the strict intertribal barriers among the aboriginals were removed. During the war leprosy control arrangements broke down under the threat of invasion, the leprosarium being closed and patients returning to their own homes, so that during the last decade there

has been a considerable increase in the disease. It is confined almost entirely to the northern half of the territory, which has a humid, tropical climate. In this area there are 7,140 full-blooded aboriginals, in whom 264 cases of leprosy have been found among 4,181 individuals examined, and it is expected that a total of some 400 cases will be found. Most of these people "are now living at missions, native settlements or cattle stations, crowded together in tiny 'humpies' devoid of windows or ventilation of any kind." The lack of sanitation, the frequency of hookworm, and the fairly high proportion of lepromatous cases (49%) are involved in the rapid spread of the disease. Surveys are being made and all open cases are segregated in the Channel Island leprosarium, on an island 7 miles from Darwin, persuasion being used as far as possible instead of compulsion. The incidence in various localities varies from nil up to 147 per thousand. The expense of treatment has been decreased from £13 to £1 per year by using DDS. The criteria for discharge from the leprosarium are given.—[From abstract in *Trop. Dis. Bull.* 49 (1952) 871.]

6 WARDEKAR, R. V. Memorandum on the Leprosy Work of the Gandhi Smarak Nidhi [Gandhi Memorial Fund]. Gandhi Memorial Leprosy Foundation, Memorandum No. 1, Wardha, India, 1952, 11 pp.

When the Gandhi Memorial Fund established the Foundation as a division for antileprosy work, it was necessary because of the colossal magnitude of the leprosy problem in India first to decide what type of work should be supported. There are in India about 100 colonies with approximately 15,000 patients, whereas there are at least 1,500,000 cases of which probably 300,000 are infectious. Although the Nidhi is in no way opposed to colonies, it felt that to dissipate its limited funds along that line would not contribute effectively to the control of the disease. It was decided, in view of the encouraging results of treatment with the sulfones, to confine the efforts mainly to control work in selected areas by providing for the finding of cases in the villages and treating them at local dispensaries. The Nidhi cannot start or aid any home for healthy children of leprosy patients, or help solve the difficult problem imposed by leprous beggars, or do much in the way of research, although some aid will be given with respect to the problems of contacts, infectivity of cases, and rehabilitation of leprosy patients. Propaganda and publicity will be undertaken, and the compiling of statistics. Arrangements are being made for special training of physicians, "leprosy organizers," and "leprosy social workers"; some of them will be taken over by the Foundation, others by other agencies. A number of scholarships will be offered to medical students who on graduation may be employed. There will be established "control units" in 15 places in 10 provinces, and "leprosy clinics" [see next abstract] in 16 or 17 places in 12 other provinces. It is expected that the staff will include 20 doctors, 20 organizers and 20 social workers engaged for 10 years with the possibility of continuance for another like period. —H. W. W.

6 WARDEKAR, R. V. Memorandum on Our "Leprosy Control Scheme" and the Details Regarding its Working. Gandhi Memorial Leprosy Foundation, Memorandum No. 2, Wardha, India, 1952, 19 pp.

Leprosy is an all-India problem, and also essentially a rural one. Although the best method of control is the segregation of all infective cases, the circumstances require the adoption of the second best method. This memorandum gives full details of the scheme adopted [see above]. (1)

Each "control unit" will be staffed by a doctor, a "leprosy organizer" to search out cases, an assistant to maintain records and aid the doctor otherwise, and a peon. It will have an area not more than 10 to 12 miles across and containing 35-40 villages with an average population of about 20,000 people (less if the prevalence is high), with 400-800 cases. The area will be subdivided into three parts, each to have a central clinic for 10-15 villages. Each clinic will be attended once a week, and the other 3 working days will usually be spent in villages previously scouted out by the leprosy organizer. Transportation will be by bicycle or bullock cart. Assistance in the villages is expected from local "volunteer social workers." [Nothing is said of trained nurses, which are not available.] The areas of these control units are to be around existing colonies, and they will operate in connection with local agencies "which will be responsible for the day-to-day work" and are to raise funds to supplement the grants from the Nidhi, which will supervise the operation. Special attention will be given in the surveys to children under 15 years of age. Success in the control scheme, it is said, "depends on finding out every case of leprosy, especially every infective case." (2) The "control clinics," single stations each for 10-12 villages, will each be staffed full-time only by a leprosy social worker and a peon. The treatment will be given once a week by a local doctor—a private practitioner who includes leprosy patients in his practice—who will receive only an honorarium for travel. The establishment of these clinics will depend largely upon local initiative. Regarding the treatment to be used, it is pointed out that whatever the advantages of parenteral DDS or combined DDS and hydnocarpus oil, it will not be practicable to employ injection therapy. [The author, in a personal communication, says that in India hydnocarpus oil is still believed to have a place in therapy, especially in neuromacular cases to clear up macules by intradermal injection and to prevent neural deformities by perineural injection. The plan set forth is not merely theoretical, the author himself having operated a "unit" for more than a year.]

—H. W. W.

IRVINE, A. C. The running of a small leprosarium in Kenya. *East African Med. J.* **28** (1951) 280-282.

Attached to a general hospital dealing with 5,000 inpatients a year, the author has since 1922 conducted a small adjacent inpatient leprosarium of 20 to 30 patients, and a well-supervised outpatient clinic for 60 patients who came willingly when the news of the efficacy of the sulfones spread abroad in the area. He sees no reason to be afraid of the larger doses, particularly of sulphetrone, and hints that we might be premature in using lower dosages, with loss of the benefit of quicker and surer cure. Background diseases should never be ignored; tapeworm is of importance in his area. No busy general doctor can afford to ignore the leprosy cases in his area, and can do a great deal of good work at little cost of money and time.

—J. ROSS INNES

LENDRUM, F. C. The name "leprosy." *American J. Trop. Med. & Hyg.* **1** (1952) 999-1008.

The purpose of this article is to examine the evidence as to whether the Biblical name of leprosy is accurate, regardless of its disastrous emotional associations. A full-page tabulation gives examples of Greek words related to *lepra*. There are a historical summary of "leprous laws" and such words as "unclean," "blemish," "Zaraath," "plague of leprosy,"

"elephantiasis," etc., and pertinent references in the Bible and the Hyppocratic writings. The central problem of leprosy today is not the discovery of more effective medication but rather that of the removal of the barrier between patient and treatment created by a disastrous nomenclature. The article is scholarly, and should be read by those interested in this problem.

—F. A. JOHANSEN

CESARINO NETTO, J. B. Grupos sanguíneos na lepra. [Blood groups in leprosy.] *Arq. mineiros Leprol.* **12** (1952) 53-55.

The members of all the groups studied are subject to leprosy. No one group is especially liable to infection. The distribution of blood types in leprosy patients corresponds to that met with in the healthy population.—[English summary.]

NAMBA, M. and FUJIWARA, H. Studies on the electrophoresis of leprosy serum. *La Lepro* **21** (1952) 5-10 (in Japanese; English abstract, p. 5).

In this experiment, the serum proteins of each type of leprosy were analyzed with Tiselius's apparatus. No remarkable change was seen in lepra maculosa and lepra nervosa, only a slight increase of γ -globulin. In lepra tuberosa, γ -globulin was markedly increased, and in some cases the albumin was increased. In the erythema nodosum which occurs in lepra tuberosa, γ -globulin was increased as much as in lepra tuberosa, while there was marked decrease of albumin and increase of α - and β -globulins. In the so-called secondary neural leprosy almost the same changes were seen as in lepra maculonervosa.—[From abstract.]

MELAMED, A. J., FIOL, H. and BRUSCO, C. M. Reacción leprosa y síndrome de adaptación. [Lepra reaction and the adaptation syndrome.] *Día Medico* **24** (1952) 1562.

The authors hold that lepra reaction is of the nature of the manifestations of the general adaptation syndrome of Selye, a fact which is suggested by the clinical picture of the reaction, with erythema multiforme, erythema nodosum, joint pains, etc. They have observed reactions provoked by smallpox vaccine, and upon analyzing the causes and mechanisms have concluded that the aggressive action of the vaccine was probably the determining factor. They extended their observations with respect to the aggressive action of other factors: tuberculin, potassium iodide, sulfones, etc. All of them cause "systemic stress," and this characteristic is the common denominator of the factors of diverse nature. In view, therefore, of the definition of the "alarm reaction," they believe that lepra reaction has the same attributes. Considering this concept with that of the general syndrome of adaptation, they suggest that lepra reaction may appear in the first phase as an expression of an alarm reaction, or in the third phase signifying the exhaustion of resistance. They point out that the leprosy infection is a systemic aggressor of importance, for which reason lepra reaction may be conditioned by the disease itself, or by the action of aggressive factors of other kinds. In proof of this hypothesis they present 4 cases in reaction treated with cortisone, 3 of them lepromatous and the other tuberculoid. The reaction phenomena in all of them diminished or disappeared during the cortisone treatment. In 2 of the lepromatous cases sulfones caused reactions during the administration of the hormone.

[Nothing is said of this in connection with the third lepromatous case or the tuberculoid one.] —G. BASOMBRI

GUIMARAES, N. Efeito das substâncias anti-histamínicas sobre a leprominoreação (Tentativa de dissociação das reações precoce e tardia.) [Effects of antihistaminic drugs on the lepromin reaction; an attempted dissociation of the early and late reactions.] *Hospital* (Rio de Janeiro) **40** (1951) 769-772.

Reference is made to the fact that antihistamin drugs do not affect the tuberculin reaction. The present experiments were made to determine whether such drugs would affect either the early (Fernández) or late (Mitsuda) reaction to lepromin. Two drugs were used, trimeton (Schering) and neoantergan (Rhodia), and 7 preventorium children and 4 leprosarium patients, all of whom were lepromin positive, were chosen. The antihistamins were given for 8 days before retesting and continued until the late readings were made. No significant differences were found between the results of the first and second tests. It is concluded that the findings confirm the belief that—admitted that the phenomenon of Fernandez is of allergic nature—the allergy must be of the same type as tuberculin allergy.—[From abstract in *Trop. Dis. Bull.* **49** (1952) 1127.]

ORSINI, O. Prova da histamina no diagnóstico da lepra. [The histamin test in the diagnosis of leprosy.] *Arq. mineiros Leprol.* **12** (1952) 124-126.

The author proposes another technique for showing up the hypochromic anesthetic spots of leprosy. This consists of tracing straight lines with the point of a small saw or other similar instrument, scraping the spot in one or many directions, and applying 1:1,000 histamin. Lewis' triple reaction appears in its three phases outside the lesion, in well-defined and characteristic aspects.—[From the English summary.]

KENNEDY, P. J. Ocular manifestations in leprosy. *American J. Ophthal.* **35** (1952) 1360-1364 (Society Proceedings).

This is a survey of ocular manifestations in patients at the leprosarium of the Bahamas. The findings in the eyes of 20 patients were: 1 enucleated; 9 choroiditis; 12 keratoconjunctivitis; 5 early iris changes; 2 advanced iritis with synechias and secondary cataract; 2 pthisis; 5 mature cataracts; 6 immature cataracts; 6 normal. Since the leprosarium has no hospital facilities, nor resident doctor or nurses, surgery was not possible though recommended in 6 cases with cataracts. One of the discussers stated that in his experience cataract extraction in leprosy patients is always complicated by adhesions to the iris. He had performed corneal transplantations, but all of the grafts had turned opaque after 2-3 weeks. Beading of corneal nerves are seen under high magnification. Lepra cells were identified in histological examinations of the cornea. Conjunctival smears were done in 100 cases, but lepra bacilli were found in only eight slides.

—F. A. JOHANSEN

SATO, S. and MAYAMA, A. Two cases of syringomyelia; comparative study with reference to 49 cases reported in Japan. *La Lepro* **21** (1952) 1-4 (in Japanese; English abstract, p. 1).

Syringomyelia is a comparatively rare disease and is difficult to distinguish from certain cases of neural leprosy. The authors have recog-

nized two cases. One was a 48-year old farmer's wife who for a half year had complained of sensory, motor and trophic disturbances of the upper extremities with ape-hands. The other was a 39-year old woman who was suffering from similar disturbances of the four extremities, with ape-hands, talipes equinovarus and kyphosis. She also showed pupillary symptoms. In this case the left auricular nerve and the skin of the right forearm were biopsied, but they showed no histological changes and no acid-fast bacilli. These cases are analyzed in comparison with 49 others previously reported in Japan. [Three clinical photographs.]—[From abstract.]

COCHRANE, R. G. The chemotherapy of leprosy. *British Med. J.* **2** (1952) 1220-1223.

This paper summarizes briefly the use of chaulmoogra oil and then discusses the mode of action of the three forms of sulfones in use, basal, mono- and disubstituted. Whereas Lowe holds that all forms are broken down to the parent DDS before becoming therapeutically effective, the writer believes that there is not sufficient DDS present in a 50% solution of solapsone (sulphetrone) to account for the remarkable improvement that it causes. As suggested by Payne, it may be that a monosubstituted derivative is produced in the body, which would explain the effectiveness and lack of toxicity of solapsone when given parenterally. He believes it is safer to give either the mono- or disubstituted forms parenterally than to use DDS, because of the toxicity of the latter. Regarding cure, there appear to be four stages of progression: (1) change of morphology of *M. leprae*; (2) a phase in which the bacillus is stimulated into activity; (3) a phase when the bacilli begin to diminish, and presumably reproductive capacity is affected; and (4) when they cease to multiply and undergo disintegration to acid-fast dust, and the macrophages dispose of these degenerate forms. These granular forms, often found in the small nerves of the skin, may be a resistant phase of *M. leprae* and a potential cause of relapse. As long as sulfones are given these forms cannot develop, but if treatment is stopped the prelepromatous stage of leprosy may again develop. Thus we may have to wait 10 to 15 years before concluding that a "cure" is permanent.

—G. O. TEICHMANN

FLOCH, H. and DESTOMBES, P. Sulfones et fer; sulfones et anomalies osseuses. [Sulfones and iron; sulfones and bone anomalies.] *Inst. Pasteur Guyane et Terr. Inini*, Publ. No. 230, 1951, May.

The danger of sulfone anemia has been highly exaggerated. The simple addition of iron protoxylate is sufficient to prevent this anemia. With regard to painful muscular and bone manifestations reported by certain authors, these are very rare or very mild and transitory. Furthermore, they are not at all specific to the DDS treatment, as some writers have believed.

—AUTHOR'S ABSTRACT

FLOCH, H. and HORTH, R. Intérêt de l'amide nicotinique dans les intolérances aux sulfones et le traitement des réactions leprotiques. [Nicotinic amide in intolerance to sulfones and in the treatment of leprotic reactions.] *Inst. Pasteur Guyane et Terr. Inini*, Publ. No. 243, 1951, October.

Trials made by the authors have shown that vitamin PP administered simultaneously with the sulfones, by injection or by mouth, decidedly in-

creases the tolerance to the latter drugs. Further, vitamin PP therapy—six tablets of 0.05 daily for at least 12 days—is also the best treatment for use in cases of leprotic reactions. —AUTHOR'S ABSTRACT

7 MERIDITH, J. S. and PATTON, G. Q. A preliminary report on the use of D.A.D.P.S. in leprosy. *East African Med. J.* **28** (1951) 197-203.

In a small leprosarium attached to a general hospital (Kasama) and in a small separate leprosarium (Kawimbe), in Northern Rhodesia, 116 unselected leprosy cases were treated with DDS by the dosage proposed by Lowe at that time, namely, gradation from 100 to 400 mgm. daily over 8 weeks. Drug reactions occurred in 44 cases, such as exacerbation of nodules in lepromatous cases, exfoliative dermatitis, and exacerbation of limb pains. Temporary cessation of treatment and resumption at a lower dosage seemed to deal with such troubles successfully. There were nine deaths, but 4 were due to pneumonia and 5 to severe malaria. In the six months of treatment 15 of the 37 lepromatous cases had improved considerably, as had 65 of the 123 tuberculoid cases. Bacteriologically, 10 cases had become negative, and in 3 others the bacilli were much reduced. A noticeable improvement in the mental outlook and physical condition of the patients was noted very soon, and healing of ulcers and improvement in nerve swellings and pain had occurred. —J. ROSS INNES

7 ROY, A. T. Suspension of diaminodiphenyl sulfone in leprosy. *Lep. Rev.* **23** (1952) 73-79.

This is a report on one year's treatment of lepromatous leprosy at the Purulia Leprosy Home with 20% oily suspension of DDS. Of the different oils tried—filtered groundnut oil, hydnocarpus oil, and acid-free purified and deodorized coconut oil—the first was found to be too thick for convenient use. Subcutaneous injections of 1 cc. were given all patients twice weekly, irrespective of age or sex. Deposits of oil tended to form but could be minimized by massage. Of the 170 patients treated—63.5% of whom had reactions, prolonged in 10 cases—12 became nearly bacteriologically negative, 42 improved considerably, 80 showed only slight improvement, while 36 remained stationary or became worse. —G. O. TEICHMANN

7 WHEATE, H. W. Preliminary report on sulphetrone therapy in lepromatous children. *East African Med. J.* **28** (1951) 272-277.

The Kumi leprosarium in Uganda has a separate institution for children. Here the author studied 25 lepromatous children under oral sulphetrone treatment for periods of 6 to 20 months. The dosage schedule was graded by weeks, with rest weeks, from a daily dosage of 0.5 gm. to 3 gm. Hematological examinations during the period tended to fall into abeyance, as the danger of anemia was soon found to be very small. There was a noticeable degree of clinical improvement in all cases within 6 months, with improved general health, increased appetite, gain in body weight, healing of ulcers, decrease in swelling of the feet, and regression of the lepromatous skin lesions. Although many patients had shown striking improvement, the author felt that at least three years further treatment might be needed. Bacteriological changes were minimal during the first 6 months, but after that there were slow, steady changes. These were: polar staining and gradual disintegration of the bacilli, and gradual dissolution of globi and bacterial masses. Macrophages containing large numbers of bacteria seem to retain their nuclear and cellular structure, not

undergoing degeneration. Smears from nodules, particularly those of the ears, are slow of change during the first year. Discussing reactions, the author comments that all cases which had them showed in the end permanent improvement in the lepromatous lesions and general health. During the acute emergency special nursing care and simple measures, such as alkalis in large doses, proved of value. —J. ROSS INNES

CONNOLLY, E. M. Some notes on the sulphetrone treatment of leprosy. *East African Med. J.* **28** (1951) 278-279.

The author reports on the treatment of 45 unselected lepromatous cases, about one-half of them children, in the Buluba leprosarium on the shores of Lake Victoria in Uganda. The results are given as: (a) Clinical: 44% had complete clearing up of the lesions; in 46% they were much diminished; in 8% no change. (b) Bacteriological: negative skin snips, 46%; fragmentation and diminution of bacilli, 44%; no change, 8%. (c) Lepromin reaction: change from negative to positive, 55%; no change, 44%. No side effects to the drug were observed. Laboratory and clinical care was close and assiduous. [This observation is interesting, as the author states that the total average dose over two years approximated 1,000 to 1,500 gm., and some cases were taking 6 to 7 gm. daily. The usual dosage is not given, but it was probably 0.5 to 3 gm. daily by mouth, that being the accepted dosage at the time in this area.] —J. ROSS INNES

LOWE, J. Acute granulocytosis caused by TB1/698 (para-acetamidobenzaldehyde thiosemicarbazone). *Lep. Rev.* **23** (1952) 109-114.

Among 146 cases treated with this drug for periods up to 21 months the only serious toxic effect was acute agranulocytosis in four cases, three severe and 1 mild. In all 4 cases the condition occurred between the 3rd and 6th weeks. The fact that none occurred later suggests that it is an allergic phenomenon, and not a toxic one due to accumulation of the drug. The symptoms were sudden fever with chills, suggestive of malaria, but marked reduction in the granulocytes was observed on microscopic examination. Only 1 case showed typical agranulocytic angina of the mouth and throat. Rapid recovery followed penicillin therapy. The mild case continued on TB-1 therapy, but the others were transferred to DDS, without further complications. Regarding the control of leprosy, the writer holds that it is necessary to separate infective cases from healthy persons, especially children. Although sulfone treatment is a powerful aid in reducing infection, it is not sufficient in itself. —G. O. TEICHMANN

LOWE, J. Isoniazid in leprosy. *Lancet* **263** (1952) 1012-1013.

Twenty patients with uncomplicated leprosy, 10 lepromatous and 10 tuberculoid, were treated for 5½ months with isoniazid, commencing with 50 mgm. and increasing to 150 mgm. daily. Because of the poor response the dosage was later increased in some cases to 300 mgm. daily. No significant improvement took place. Neither was any improvement seen in 7 cases suffering from complications following sulfone or thiosemicarbazone treatment, apart from what would result simply from the withdrawal of those drugs. Isoniazid is possibly of slight benefit to leprosy, but its action is much less than that of the sulfones or thiosemicarbazone in comparable cases. —G. O. TEICHMANN

- LOWE, J. ACTH and cortisone in treatment of complications of leprosy. *British Med. J.* **2** (1952) 746-749.

As some complications of leprosy are difficult to treat and may be precipitated or aggravated by chemotherapy, and as there are certain resemblances between them and conditions alleviated by ACTH and cortisone, a trial of these hormones was made on 38 cases in Nigeria. Full dosage could not be given throughout for reasons of economy, but full doses—i.e., 50 mgm. of ACTH every 6 hours or 100 mgm. of cortisone every 12 hours—were given for 2 to 3 days, followed by smaller doses for 2 days as a single course. It was found that, although the acute manifestations of leprosy can be controlled very readily by hormone treatment, there is grave danger of aggravating the underlying disease, particularly in patients receiving repeated courses, and even of aggravating the particular symptoms to alleviate which the hormone has been given. Thus the early results are good, but the late results too often bad. Attempts to minimize the bad results by modified dosage and by energetic chemotherapy during hormone treatment have had little success. Nevertheless, in two conditions, both of them serious, the results are striking and are usually attained with such small doses that hormone treatment is fully justified. These are sulfone sensitivity with drug fever, dermatitis and hepatitis; and acute and sub-acute leprosy eye inflammation, in which condition the local use of cortisone appears to be effective and safe and preferable to injection. Apart from these two conditions the use of hormone treatment of leprosy is usually contraindicated.

—G. O. TEICHMANN

- DEL POZO, E. C. and GONZALES OCHOA, A. Two cases of prevention and treatment of lepra reaction by cortisone. *J. Investig. Derm.* **18** (1952) 423-424.

The authors believe that the frequency and seriousness of lepra reaction in patients treated with sulfones have been a limiting factor in their use, and thought that cortisone might be useful for the prevention and treatment of the condition. Two patients, selected because of the intense and almost continuous reaction presented when taking DDS, were treated with 100 mgm. a day of cortisone and 100 mgm. of DDS. The results were so remarkable that two days later the doses were increased to 200 mgm. of each drug. Without changing the dosage of DDS, the cortisone was gradually reduced to 100, 50 and 25 mgm. daily and finally stopped. After two days without the hormone the lepra reactions reappeared. Cortisone was resumed, and the reactions subsided again in 2 days. All necessary laboratory analyses for detecting undesirable effects of cortisone were made; the patients showed good tolerance. This preliminary report is made because the results were so striking. The work was done at the Instituto de Salubridad y Enfermedades Tropicales, Mexico, D. F. —F. A. JOHANSEN

- BRAND, P. W. The orthopaedic care of leprosy patients. *Lep. Rev.* **23** (1952) 50-62.

The writer urges that, besides medicinal and other care of leprosy patients, greater efforts should be made to prevent them from becoming crippled. As anesthesia and paralysis are the two principal causes of crippling, he advocates in the former condition the avoidance of any work that causes undue friction, or involves danger of cuts or of burns, as in the handling of hot articles in cooking. The use of suitable hand-sewn shoes

with metatarsal bars and the avoidance of prolonged standing are advised to prevent ulcers of the feet. In paralysis of the hands the interossei and lumbricals are affected, but the long extensors and flexors of the wrist normally retain their power. In order to enable these patients to grip he uses a knuckle-duster splint which keeps the metatarso-phalangeal joints flexed while allowing mobility of the rest of the hand. He has also performed transplantation operations of the flexor sublimis tendons to take the place of the wasted lumbrical muscles, an operation which has proved very successful.

—G. O. TEICHMANN

GRABSTALD, H. and SWAN, L. L. Genitourinary lesions in leprosy, with special reference to the problem of atrophy of the testes. *J. American Med. Assoc.* **149** (1952) 1287-1291.

Of 179 male patients in the federal leprosarium at Carville, 28% were found to have atrophy of the testis and 19% gynecomastia. More detailed examinations in 25 cases included high-span and caliper testis measurements, and notations concerning beard growth, voice changes, thyroid cartilage size, ejaculations, impotence, temporal recession of hair, and the external genitalia. A histologic study of the testes of 20 subjects, including autopsy and biopsy material, revealed severe involvement with vascular, interstitial and obliterative changes. The rather characteristic picture of leprosy orchitis consists of infiltration of the vessel walls and adjacent tissues by the bacilli, interstitial cell clumping, and atrophy of seminiferous tubules progressing to complete fibrosis and obliterating endarteritis. The 17-ketosteroids were normal, and gonadotropins were increased in 2 of the subjects whose testes were subjected to biopsy. It is suggested that, although these patients do not present typical eunuchoid features, they fit into the general category of hypergonadotropic eunuchoids described by Klinefelter, Reifenstein, and Albright, and by Heller and Nelson, with characteristic atrophic testes, normal 17-ketosteroids, increased gonadotropins, and gynecomastia. Leprosy is one of the few disease entities of this group in which the etiologic factors are known.

—F. A. JOHANSEN

FLOCH, H. and DESTOMBES, P. Sur un nodule calcifié d'un nerf cubital lépreux. [On a calcified nodule of a leprosy cubital nerve.] *Bull. Soc. Path. exot.* **44** (1951) 719-722.

The authors report a very rare observation of calcification of the cubital nerve in a tuberculoid patient. This calcification is the last phase of a caseation process of the nerve, commonly called "nerve abscess," a condition which is specific to tuberculoid leprosy and itself also quite rare.

—AUTHOR'S SUMMARY

BALIÑA, L. M. El sistema reticulohistiocitario en el mecanismo terapeutica de la lepra. [The reticulohistiocyte system in the therapeutic mechanism of leprosy.] Thesis for the degree of Doctor of Medicine, Escuela de Medicina, Universidad Nacional de Buenos Aires, 1952, 43 pp.

After a brief review of the reticulopathies in general, which he divides into reticulitis, reticulosis and reticuloma, each subdivisible on the basis of its histopathology, the author deals with the reticulohistiocytic system in leprosy. Tuberculoid leprosy is regarded as a nodular reticulitis, lepromatous leprosy as nodular granulomatous reticulosis. He tells of his own experiments on reticuloendothelial blockage in leprosy patients (6 leprom-

atous, 1 tuberculoid) with an electronegative colloid (Congo red), following the technique of Adler and Niemann as modified by Serre and Cazal—a test never made before in leprosy. He found a low Congo-red index in the tuberculoid case and in lepromatous patients of favorable evolution, which means that they have a high degree of fixation, or hyperfunction of the reticulohistiocytic system; and this is also indicated by the finding of reticular cells in the bone marrow of lepromatous cases. From a study of 29 patients treated with sulfones, thiosemicarbazone and chaulmoogra, the author agrees with most others that the histological changes in patients improving under these drugs do not differ much from those seen in lesions which are regressing spontaneously. These treatments “accelerate the spontaneous evolution,” and the histological changes vary little with respect to the drug employed.

—J. C. GATTI

ROSEMBERG, J., SOUZA CAMPOS, N. and AUN, J. N. Da relação imunobiológica entre tuberculose e lepra. IV. A lepromino-reação em crianças vacinadas um ano antes com BCG, descendentes de doentes de lepra. Dissociação entre alergia tuberculínica e reação de Mitsuda. [The immunobiological relationship between tuberculosis and leprosy. IV. The lepromin reaction in healthy children of leprosy parents, vaccinated with BCG a year previously; dissociation of tuberculin allergy and the Mitsuda reaction.] *Rev. brasileira Leprol.* **19** (1951) 8-18.

This report deals with 38 healthy children of leprosy parents, who had been vaccinated with BCG by mouth 12 months previously when aged from 1 to 18 months. All gave definite Mitsuda reactions by the third week, 1+ in 21 and 2+ in 17. Single doses of 0.1 gm. BCG had been given to 12, progressive daily doses to a total of 1.19 gm. in 28 days to the others. When tested previously, after the vaccination, all but 4 (they of the single-dose group) had reacted to lepromin; even these were now positive. Complete dissociation between tuberculin sensitiveness and the lepromin reaction has been verified; despite the monthly tests, 2 cases had never been found positive to Mantoux at 1:10, and of the 36 which had shown sensitivity 29 had become negative again 6 to 11 months before the present lepromin test. Both of the former cases and 28 of the latter have been tested for infra-tuberculin sensitiveness (latent allergy) with heat-killed BCG, and 17 of these 30 had proved negative. These results agree with those previously obtained by the authors with children with no history of leprosy contact, and confirm their views of the independence and diversity of the tuberculin reaction (of allergy in tuberculous infection), and the Mitsuda reaction (of resistance to leprosy infection.)—[From the English summary.]

ROSEMBERG, J., SOUZA CAMPOS, N. and AUN, J. N. Da relação imunobiológica entre tuberculose e lepra. V. Tempo de positivação da reação de Mitsuda após a introdução simultânea de BCG por via oral e de lepromina por via intradérmica. [The immunobiological relationship between tuberculosis and leprosy. V. The time of positivization of the Mitsuda reaction after the simultaneous introduction of BCG (oral) and lepromin (intradermal).] *Rev. brasileira Leprol.* **19** (1951) 19-26.

A group of 45 tuberculin-negative (Mantoux, 1:10) preventorium children, 5 days to 11 months old, separated from their leprosy parents at

birth, were injected with lepromin and 30 were vaccinated orally with BCG while 15 were held as controls. The dosage of BCG was 0.1 gm. on the day of the lepromin injection and the same dose twice more at 7-day intervals. None of the controls showed any reaction after 90 days, whereas all of the vaccinated children gave clear positive reactions, 1+ in 18 and 2+ in 12. The positive responses appeared between the 23rd and the 60th days, mostly between the 30th and 40th days. Certain of the cases developed erythematous and infiltrative reactions of the regressive type at the lepromin sites in 48 hours, and 2 did so on the 9th day, i.e., 48 hours after the second dose of BCG. These responses did not interfere with the late positivization of the Mitsuda reaction. Here is a clearer demonstration than has been obtained by other methods of how quickly BCG is able to induce the organic capacity of reacting to the lepromin in children of the most tender ages. Since it is an established view that the positive Mitsuda reaction is proof of resistance to the leprosy bacillus, it would be interesting to undertake this type of vaccination on a mass scale, especially with newborns in places where prompt isolation of the children of leprosy parents is not possible.—[From the English summary.]

ROSEMBERG, J., SOUZA CAMPOS, N. and AUN, J. N. Da relação imunobiológica entre tuberculose e lepra. VI. Inversão da reação de Mitsuda com o BCG oral em indivíduos reiteradamente negativos a lepromina durante vários anos. [The immunobiological relationship between tuberculosis and leprosy. VI. Inversion of the Mitsuda reaction with oral BCG in individuals repeatedly lepromin negative for several years.] *Rev. brasileira Leprol.* **20** (1952) 67-74.

This study involves 63 preventorium children of leprosy parents, 2 to 12 years old, all lepromin negative and most of them persistently so in repeated tests made at yearly intervals up to 6 tests in one instance (overall average, 2.9 tests). All were also tuberculin negative (Mantoux, 1:10). BCG was administered by mouth, four 0.2 gm. doses at weekly intervals. The lepromin test, performed 3 days after the last BCG dose, showed after the usual 30 days positive responses in 51 cases, \pm in 6, 1+ in 34, and 2+ in 11. The 12 negatives and the 6 \pm reactors were given a second lepromin test 30 days after the first one; the latter group all showed intensification of the reaction (1+), and 9 of the former one became positive (1+), while 3 remained completely negative. Thus, 60 of 63 children (95.2%) had been converted to positive reactors. As in previous work, in only a few cases was this inversion of the Mitsuda reaction by BCG accompanied by the early Fernandez reaction (3 of 66 cases).—[From the English summary.]

NEYRA RAMIREZ, J. and PESCE, H. Estudio en 288 casos de las correlaciones inmunológicas lepra-tuberculosis. El viraje de la lepromino-reacción con BCG y su aplicación a la profilaxis de la lepra. [The study in 288 cases of the immunological correlation between leprosy and tuberculosis; change of the lepromin reaction with BCG, and its application in prophylaxis.] *Temas de Leprología*, No. 24. Buenos Aires, Patronato de Leprosos, 1952, 8 pp.

In an area where tuberculosis is endemic, 25 leprosy cases showed 77% tuberculin positives, vs 92% in the healthy population. In a region where leprosy is not endemic, 56% of 100 tuberculin-positive tuberculosis cases reacted positively to lepromin (Mitsuda), as compared with only 15%

among healthy people in the same area, indicating common sensitization to the two diseases. In the latter experiment the lepromin reactions were strongest in tuberculin-positive adults under treatment for tuberculosis and in good condition, and also in tuberculin-positive children with early tuberculosis, indicating that early tuberculosis exercises a defensive role against leprosy, and that the Mitsuda test might be used in tuberculosis in determining the prognosis. In 100 tuberculin-negative healthy subjects only 15% were lepromin-positive, as compared with 45% (Fernandez) among those with tuberculosis. In 10 tuberculin-negative nursing mothers all of the lepromin tests were negative.—[From abstract in *Trop. Dis. Bull.* **49** (1952) 1126.]

PEREIRA, P. C. R., SALOMÃO, J., RODRIGUES VIEIRA, I., PEREIRA, A. C., PIRES, U. and CASILO, A. Da reversibilidade da lepromino-reação. [Reversibility of the lepromin reaction.] *Arq. mineiros Leprol.* **12** (1952) 32-47.

The authors report on efforts to convert lepromin-negative children to positive reactors in the three preventoria of Minas Gerais. In one place, 28 such children were divided into 3 groups: one, of 12 patients, received sulphetrone and diasone; another, 10 patients, was treated with Souza-Araujo's leprolin; the third, 6 children, was given injections of protinfectol. After 2 months only one case (diasone) was positive, but after one year of continuous treatment 66.6% of the sulfone-treated cases were positive and 37.5% of these treated with leprolin; not one of the protinfectol cases reacted. In another preventorium 24 similar patients were treated with diasone. After 4 months 25% were positive, and 45.6% after one year. In the third preventorium 42 children were treated with BCG and tested with lepromin (integral) 20 days later. Positive results were shown by all but one (97.6%). One year later the reactivity was found to persist, although weaker. Histological examinations of positive reaction lesions showed a structure—especially in the BCG cases—taken to signify the establishment of immunity [photomicrographs]. It is concluded that the lepromin reaction may be reversed, from negative to positive, by the use of various substances, slowly with most things but rapidly with BCG. The use of sulfones and BCG on a large scale in prophylaxis is recommended.—[From the English summary.]

SCHUJMAN, S. Estudio evolutivo del estado inmunológico en los casos lepromatosos beneficiados con diversos medicamentos antileproso (chaumoogra y sulfonas). [Changes of the immunological state in lepromatous cases benefited by treatment with chaumoogra and sulfones.] *Bol. Soc. cubana Derm. y Sif.* **9** (1952) 43-48.

This study is of the immunologic condition of 150 lepromatous cases treated during a period of several years—100 with sulfones and 50 with chaumoogra—and evidently benefited. In the cases showing moderate or marked improvement (but not negative), there was no immunologic change; they all remained lepromin negative. Of the 20 cases made totally negative, clinically and bacteriologically (12 with chaumoogra and 8 with sulfones), 2 became 1+ positive and 3 weakly positive. It is uncertain whether this favorable change was caused by the medication or was due to the spontaneous increase in the immunologic condition often seen in old lepromatous patients. [This paper is illustrated by before-and-after treatment photographs of a rather advanced lepromatous case and one of the

positive lepromin reactions in that patient, and a photomicrograph of the positive reaction nodule showing the characteristic epithelioid follicular structure.]—[From the English summary.]

DE MORAES PASSOS, A. C., BAPTISTA, L., NOGUEIRA MARTINS, A. C. C., PEDRAL SAMPAIO, B., SILVEIRA, H. and RIBEIRO MARQUES, A. O comportamento da reação de Mitsuda em tuberculosos após a becegeização oral. [The behavior of the Mitsuda reaction in tuberculous patients after oral BCG vaccination.] *Rev. brasileira Leprol.* **20** (1952) 1-19.

This report first reviews the literature concerning cosensitization by *M. tuberculosis* and *M. leprae*, the Brazilian experience with BCG vaccination by the oral route, and the facts proving the dissociation of allergy and immunity; also the experience of one of the authors with patients suffering from dermatoses, hyperergic to tuberculin, in whom oral BCG vaccine treatment resulted in disappearance of the skin lesions in consequence of reinforcement of immunity and desensitization. An attempt has been made to interpret the cases of Mantoux-positive lepromatous individuals as having had tuberculous infection with allergy but with a loss of immunity, this allowing later occurrence of the leprosy infection. The experiment here reported involved 57 hospitalized patients with active pulmonary tuberculosis, 51 of whom were submitted to the Mantoux test with 38 positive results (74.5%). All were then tested with lepromin, and 33 gave positive reactions (5 mm. or more) on the 30th day, 22 were doubtful (less than 5 mm.), and 2 were quite negative. Those who had shown papules less than 5 mm. received oral BCG, after which they reacted to lepromin more strongly than before, while in the nonvaccinated controls there was a decrease.—[From the English summary.]

STANCIOLI, J. and PIRES, M. Teste de Mitsuda em tuberculosos. [The Mitsuda reaction in tuberculous patients.] *Arq. mineiros Leprol.* **12** (1952) 107-114.

There must be a close relationship between the factors which cause the Mitsuda reaction after BCG and the great frequency of positive results in tuberculous patients. There is an almost complete absence of tuberculous cases which later show leprosy changes. There is a perfect agreement between the results of the Mitsuda test and the rarity of such cases.—[From the conclusions in English.]

DE OLIVEIRA LIMA, S. and FONTES MAGARAO, M. Cutirreação a tuberculina em doentes de lepra. [Cutireaction to tuberculin in leprosy patients.] *Clin. Tisiol.* **7** (1952) 65.

Among 1,019 leprosy patients at the Curupaiti Asylum, Rio de Janeiro, 119 (11.7%) cases of pulmonary tuberculosis have been found during the three-year period 1948-1951. In all these cases, the disease developed some time after a diagnosis of leprosy had been made. Of 54 patients, 13 with tuberculoid and 41 with lepromatous leprosy, 42 (77.8%) proved tuberculin-positive. Positivity was more frequent among lepromatous (80%) than among tuberculoid (69.2%) cases. Erythema nodosum followed the testing in 21 of the 54 patients, one of the cases tuberculin-negative. This complication was finally controlled with penicillin after other therapeutic measures failed.—[From abstract in *American Rev. Tuberc.* **66** (1952) 107, supplied by F. A. Johansen.]

- DE ANDRADE, L. and SILVA, C. Hemagglutination with human red blood cells and BCG tuberculin. *J. American Med. Assoc.* **149** (1952) 1411 (Foreign Letters, Brazil).

The authors have reported the results of investigations on the hemagglutination test of Middlebrook and Dubos and its use in connection with tuberculosis and leprosy. Because of the difficulty of obtaining in Brazil specific antigens prepared with the polysaccharide fraction of the tubercle bacillus or the Lederle tuberculin (O.T.) recommended by American investigators, they tried to use several tuberculin preparations made in the country. The only one that gave good results was prepared by cultivation of BCG on a Sauton medium. Human O, Rh-negative, red blood cells sensitized by the BCG tuberculin were used. A qualitative test useful for routine work is performed in capillary tubes, as an adaptation of Chown's test for Rh antibodies. Tests were made on 271 sera, 68 from tuberculous patients, 116 from leprosy patients, and 87 from normal blood-bank donors. Of the tuberculous sera, 52 (76.4%) were positive, 33 with titers from 1:64 to 1:1024, the others 1:32 or less. Of the leprosy sera, 94 (81%) were positive, 54 with the higher titers. Of the blood donors, only 5 (5.7%) were positive, and the titers were only 1:4 in three, 1:8 in one, and 1:16 in one. The leprosy patients included 11 of the indeterminate form, 15 tuberculoid, and 86 lepromatous, the last group comprising 43 active cases and 43 regressive ones ready for transfer to the outpatient department. Among the 43 patients in regression, 14 gave negative results and many of the others had very low positive agglutination titers. Three of them, however, had high titers (1:256 and 1:1024), and these are explained as being caused by visceral leprosy which had probably not regressed in parallel with the skin lesions. It is concluded that the Middlebrook-Dubos test is useful for supplying information as to the course of the disease in patients with the lepromatous form, and especially candidates for transfer to the outpatient department.—[Condensation.]

- COCHRANE, R. G. Bacteriological index in leprosy. *Lep. Review* **23** (1952) 135-138.

This article stresses the importance of having some standard method of estimating bacteriological positivity and gauging progress in treatment. The three methods suggested by Muir, Dharmendra and Cochrane are given. The reviewer agrees that Cochrane's method of making 16 smears from each patient is sound in theory but "in practice is time consuming and very tedious" and quite impossible where large numbers of cases have to be examined. Dharmendra's method is one that can be recommended for ordinary purposes, i.e., six smears from likely places graded 1+ to 4+, totalled, and divided by 6.

—G. O. TEICHMANN

- KHANOLKAR, V. R. A concentration method for acid fast bacilli in skin biopsies from leprosy patients. *Leprosy Rev.* **23** (1952) 133-138.

A biopsy specimen $\pm 5 \times 3 \times 5$ mm. is dropped immediately into ± 3 cc. of 1% acetic acid. After 4-8 hours the epidermis is scraped off, the tissue is placed, with ± 3 cc. of 1% acetic, in a pyrex glass homogenizer tube and ground with a glass crusher [i.e., Potter-type homogenizer apparatus] at $\pm 2,000$ r.p.m. for 5-10 minutes. This results in a milky suspension with a residual fibrous cake at the bottom. The sides of the tube are washed down with 1-2 cc. more of the acid, making ± 5 cc. total; 20

drops of a 1:10 petroleum ether-sulfuric ether mixture are added; the tube is shaken vigorously, corked, and allowed to stand 15-20 minutes; distilled water, 10 cc., is then flowed down, again washing the wall. From the white or amber ring formed on the surface after 2-5 minutes, 8 drops are picked up with a 3 mm. platinum loop and spread over a 2 x 2 cm. area of a glass slide, 2 such preparations being made. After drying at 37°C, protected from dust, the slides are covered with Carnoy's fixation 15 minutes, then air dried. Stain with preheated carbol-fuchsin 10 minutes; decolorize with 33% HCl, 20-30 seconds; counterstain with dilute Azur II. (According to Cochrane [*Edinburg Med. J.* **49** (1952) 509-516], who also gives this technique, bacilli can be isolated from every active case of leprosy.)

—H. W. W.

FIGUEREDO, N. and DESAI, S. D. A new method for the detection of leprosy in neural cases and contacts. *Indian J. Med. Sci.* **6** (1952) 296-301.

Biopsy material is obtained by making two parallel incisions 3 mm. apart which meet in the corium, to obtain a wedge-shaped piece of skin. This is soaked in a centrifuge tube for 4-5 hours in 2.5 cc. of chloroform with 2.5% acetone. With a glass rod the tissue is rubbed against the wall of the tube with a rotary motion, until the piece is flattened, when it is discarded. The chloroform is evaporated over a water bath until a few drops remain. When cool, about 5 cc. of sulphuric ether are added and centrifuged at 3,000 r.p.m. for 15 minutes. The ether is then decanted, leaving a few drops at the bottom of the tube. These drops are stirred with a platinum loop and poured onto a warmed slide and a smear is made. A few drops of ether are added to the tube to wash out the residue, and this is added to the smear. The smear is fixed by heat, or with Carnoy's fluid for 10 minutes, stained with carbol-fuchsin (details), decolorized with 10% HCl, and counterstained with 1% methylene blue. By this method bacilli are found in neural cases when they cannot be found by the usual methods, and in smear-positive cases the numbers demonstrated are larger. Results of its use are given, including the finding of from 6 to 60 bacilli in 31 of 48 contacts without visible lesions.—[From abstract in *Trop. Dis. Bull.* **49** (1952) 966.]

SATO, S. Behavior of leprosy bacilli implanted in various liquid media by means of slide culture method. *Sci. Repts. Res. Insts. Tohoku Univ., Series C*, **3** (1951) 269-273.

This work was designed to test the claims of certain Japanese workers that they had obtained a limited amount of growth of leprosy bacilli in certain media. The author failed to confirm these findings and suggests that the apparent growth of bacilli was due to the tendency of bits of leproma to autolyse and to release bacillary masses into the medium. Eleven skin lepromas from 7 leprosy patients and 8 rat leprosy nodules were employed. Three kinds of suspensions were made, to contain (a) 10-20 bacilli per field, (b) 50-100 per field, and (c) vast numbers per field, scattered or massed and containing leproma particles. Various forms of media were used, such as blood or plasma, egg yolk, chick embryo juice, heart and liver. Mixtures of these substances and bacillus suspensions were smeared on narrow slides (ordinarily ones cut lengthwise into three), and after desiccation they were placed in test-tubes containing various forms of liquid nutrient media. For controls, similar preparations were made but with heat-killed suspensions. The test-tubes were sloped so as to

immerse the slides, incubated, and examined microscopically (removed from the tubes) after 10-90 days. Although tubercle bacilli grew well, there was no sign of growth of the leprosy bacilli. With the scanty inoculum it was not always easy to decide whether multiplication had occurred or not. With the rich suspension containing small pieces of leproma, the appearance often suggested that growth had really occurred, but comparison with the controls did not confirm the occurrence of even microscopical growth.—[In part from abstract in *Trop. Dis. Bull.* **49** (1952) 1125.]

- 6 TODA, T., OTOMO, S., NAKAKAWA, Y. and NAKAMURA, M. Studies on cultivation of leprosy bacilli. *La Lepro* **21** (1952) 11-17 (in Japanese; English abstract, p. 11).

The addition of amino derivatives to the media seems to have a favorable effect on the multiplication of bacilli. For judging success in cultivation we took into account the size and numbers of microscopic colonies in each generation, regarding increases of the size and numbers as positive. By this criterion, our culture of the leprosy bacilli were successful to the second generation.—[From abstract.]

- 6 YASUMOTO, K. Studies on K. F. of the acid-fast bacilli. *La Lepro* **21** (1952) 18-22 (in Japanese; English abstract, p. 18).

The K.F. of the acid-fast bacteria was strongest in the period when they stained strongly by Ziehl and their growth was vigorous. It was also stronger when we had double no staining [sic]. The pH of the boiling water influenced the K.F.; i.e., it was strongest at the neutral point and weaker at acid or alkaline levels. Among the neutral waters, it was stronger with distilled water than with tap water or physiological salt solution.—[From abstract.]

- 6 MAURI, A. C., HADLER, W. A. and CARVALHO, C. M. Quimioterapia da lepra. I. Ação do 4,4'-diamino-difenil-sulfona na lepra murina. [Chemotherapy of leprosy. I. Action of DDS in murine leprosy.] *Rev. brasileira Leprol.* **19** (1951) 85-106 (English version, pp. 106-115).

Three lots of rats were used, 60-90 days old at the start, inoculated intraperitoneally. By this route the authors always get generalized disease, the condition better for the purpose than the localized, necrosing and ulcerating lesions produced by subcutaneous inoculation. Lot A, 38 rats, was put under treatment 8 days after inoculation; the number was reduced to 30 by 3 which died within a week and 5 which were sacrificed. Lot B, put under treatment 7 months after the inoculation, consisted of 5 rats, not counting 4 which were sacrificed at that time and 3 that died within 2 weeks. Lot C was 57 untreated controls of this and other experiments. (There was this marked difference between Lots A and B despite mention of the dictum that the therapeutic effect of a drug can be evaluated only when the disease has existed before treatment.) The DDS was given in the food, in 0.3% concentration, and the average amount taken daily (Lot A) was 42.7 mgm., near the maximum tolerated dose. There was one early interruption for each of the treated groups because of toxic effects, after which the weights increased from about 100 gm. to 200-250 at the end. At the beginning, therefore, the dose was more than 400 mgm./kgm. daily, compared with ± 5 mgm./kgm. for an average man receiving 300 mgm. per day. Results: The 30 animals of Lot A all died, but much later than the controls (average 344 vs 193 days), but the lesions in the treated lot were

relatively slight, and those which survived longest had none of macroscopic size. Of the controls, 77% were dead within 7 months (the time at which treatment of Lot B was begun). Four of the 5 Lot B animals survived an average of 15 months—i.e., 8 months of treatment—and when they died there were found no macroscopic and few microscopic lesions, some of the latter without bacilli; the other animal, dead after 3 months of treatment, showed smaller lesions than in the immediate controls. The deaths of the treated animals were admittedly due largely to the high dosage of the drug. In Lot A the disease developed progressively for some time, showing that DDS does not inhibit the development of lesions, but the development was less rapid than in the controls and later there was retrogression. The findings in Lot B are taken to show that DDS has a curative effect on pre-existing lesions. It is concluded that DDS has therapeutic activity in murine leprosy. —H. W. W.

- 6 YASUMOTO, K. and HIRAMOTO, T. The therapeutic effect of tibione, PAS and streptomycin, especially of their combinations, on the rat-leprosy. Studies on the rat-leprosy (19). *La Lepro* 21 (1952) 23-25 (in Japanese; English abstract, p. 23).

The results of this study of the therapeutic effects of the drugs mentioned and combinations of them on the development of the granulomas of rat leprosy were of this order: TB1 + SM = PAS + SM < SM < TB1 = PAS < TB1 + PAS controls. In general the therapeutic effects of the drugs tested were rather slight, but streptomycin when combined with tibione gave the most marked effect.—[From abstract.]

- 6 NISHIMURA, S., KONO, M., AOYAMA, N. and TAKAHASHI, T. The treatment effect of tibione on murine leprosy. *La Lepro* 21 (1952) 26-29 (in Japanese; English abstract, p. 26).

Tibione dissolved in ethylene glycol was injected in doses of 0.1-0.2 mgm. per day, subcutaneously, for 6 days a week to a group of rats which had developed rat leprosy lesions and to another group which had been inoculated but had not developed lesions. The ulcers of the group with lesions healed rapidly, but the lepromata showed no regressive changes. In the other group, without lesions, the treatment did not prevent the development of lesions in animals which had been injected with either 1/200 gm. or 1/20,000 gm. of leproma. The treatment was effective on lepromatous ulcers, but could not make the lepromata disappear.—[From abstract.]