

CURRENT LITERATURE

The current literature of leprosy is dealt with in this department as fully as possible. It is expected that the Contributing Editors (see inside of front cover) will provide abstracts of all articles published in their territories, but when necessary abstracts are taken from other sources.

HURWITZ, E. AND ANDERSON, H. Leprosy in Panama. First thirty years of segregation. *American Jour. Trop. Med.* 16 (1936) 353-369.

This article is a report of leprosy in Panama in the 30 years since 1904, during which period a total of 320 lepers were segregated from a population of 450,000. Only 3 were born in the Canal Zone, the rest having come from the islands of the Caribbean. All except 4 were mestizos or negro. Only 33 were children. The Canal Zone government maintains the colony at Palo Seco at an average cost of \$1.15 per day. A leprosy board reviews all new patients and arrested cases. More than one-half of the patients are engaged in gainful occupation, which improves the morale and general condition. The arrested cases generally prefer to stay in the colony. Only 44 of the total have been paroled. The 17 nonleper employees, who have worked there for 20 years, are still uninfected. Marriage is permitted when physical fitness and age permit, but with the condition that the children born are separated at birth; vasectomy is also practised. The principal causes of death are tuberculosis and nephritis. The average age of onset, according to patients' statements, was 31 years; the patients entered the colony 3.7 years later to spend an average of 6 years in the colony. The treatment now in use is chaulmoogra ethyl esters given intramuscularly and "chauphosphate" (a water soluble sodium-dichaulmoogryl-B-glycerophosphate) intravenously. Mercurochrome and merthiolate were tried but abandoned. Investigation of the level of unsaturated fatty acids and total blood lipids shows lower unsaturation and higher total lipids in early "cutaneous" cases than in quiescent cases and those with advancing lesions.

—M. B. L.

MELSON, R. Note on leprosy. *Acta Dermatol. Venereal.* 17 (1936) 359-365.

The author reports five new cases of leprosy since 1930 in Norway, making a total of 49 cases now extant in that country. One of the new cases is an old man who has had the disease for forty years, two came from known heavily infected families, and two are sailors who probably were exposed while in service in the Asiatic and South American waters. The total numbers of lepers, the number detained in hospitals and those resident outside hospitals, and of new cases from 1855 to 1935 are shown in graphs.

—M. B. L.

GIMENO DE SANDE, A. AND FERNANDEZ VALDES, A. Epidemia de lepra en Andújar. [Leprosy in Andujar.] *Rev. San. e Hig. Pública.* 11 (1936) 17-34.

In Andujar, a town in the north-west of the province of Jaen, there are 39 known cases of leprosy: 1.6 per 1,000 population. The ages of 28 cases studied in detail were: under 15 years, one; between 15 and 20, two; between 20 and 40, eleven; between 40 and 60, twelve; and over 60, two. Direct contact was proved in two-thirds of the cases, and in over half husband or wife contracted it from the other. Of

22 examined bacteriologically the nasal mucus was positive in 20.—[From abstract in *Trop. Dis. Bull.* 33 (1936) 601.]

GARZON, R. AND WEISS, F. F. Estado actual de la profilaxis de la lepra en Cordoba. [Leprosy prophylaxis in Cordova.] *Rev. Med. (Cordoba)* 24 (1936) 674-707.

This is a statement by the Departamento Provincial de Higiene in the province of Cordova of the plan of leprosy prophylaxis. At present there are two pavilions for lepers. One, Perpetuo Socorro, established 50 years ago, is for women; it has a capacity of 8 beds and is run by a religious society. The other, inaugurated in 1934, is an inexpensive but practical pavilion with a capacity of 12 beds. The new orientation given the dispensaries for prophylaxis against syphilis in the province, transforming them into polyvalent dispensaries, permits the assistance of many closed cases of leprosy. A description is given of the future leprosarium of San Francisco de Chafar, with a capacity of 120 beds, already under construction. The rôle of the private organizations is humanitarian. —G. BASOMBRIO (translated).

DEL TORO CANO, F. Nuevos casos de lepra en la zona de Protectorado de España en Marruecos. [New cases in Western Morocco.] *Med. Pais. Calif.* 9 (1936) 125-128.

Leprosy appears to be increasing in the western part of Morocco, that under Spanish rule. Twenty cases were recorded in 1934, and another six in 1935. A few details are given of each of these, all of the nodular type. The largest number of cases from any one place (eight) were from Tetúan.—[From abstract in *Trop. Dis. Bull.* 33 (1936) 599.]

FRASER, N. D. The Iam Tsau Clinic for patients suffering from leprosy. *Chinese Med. Jour.* 50 (1936) 693-701.

This report describes the organization and work of the village clinic at Iam Tsau at Swatow, for the lepers [previously dealt with in *THE JOURNAL*]. Within six months 128 cases registered, 29 of whom have discontinued attendance. The cost of the clinic works out at 25 cents per visit. The author urges the establishment of more such clinics, the organization of which should be undertaken by members of the village community; leprosy should, in time, be checked at its source by these units that will function to treat cases, examine contacts, and teach simple rules of health. Advanced nodular cases should, however, be segregated.

—M. B. L.

[ANONYMOUS.] Consejos e instrucciones para los enfermos de lepra. [Instructions for lepers.] *Rev. Argentina Dermatosis.* 19 (1935) 284-286.

Advice and instructions for leper patients and their families, clearly presented in ten paragraphs. Information is given concerning the degree of contagiousness of the disease, the distinction between the cases with and without positive bacterial findings, the care to be taken with children, the hygienic measures to be taken in the homes of the patients, diet, physical exercise, etc.

—G. BASOMBRIO (translated).

WADE, H. W. Regional variations of leprosy, with special reference to tuberculoid leprosy in India. *Indian Med. Gaz.* 71 (1936) 653-659.

The author discusses the regional variations of leprosy as encountered in several parts of the world, with special reference to tuberculoid leprosy in India. Under the heading "relative variation" it is pointed out that the malignant cutaneous

form occurs relatively more frequently than the benign neural type in the Philippines, while the reverse is the case in India. According to Hayashi, involvement of the eye occurs more frequently in Japan, Carville (U.S.A.) and India, than in Ceylon, Malaya and the Philippines. "Absolute variations" are exemplified by leprous alopecia, which occurs in a large proportion of the cases in Japan, but is rare or practically unknown in most other leprous regions of the world. Cold abscess of the nerve is another absolute variation, encountered in India and also in South America. Other peculiarities of leprosy in India are mentioned. One is a diffuse form of cutaneous leprosy in which bacilli may be obtained from almost any part of the body though there may be no visible infiltration. Tuberculoid leprosy is also discussed in this connection; the variety which the author calls "major tuberculoid" is more common in Calcutta than in any other region that he has visited.

—M. B. L.

DA SILVEIRA, R., MONTEIRO DE BARROS, O., AND GONZAGA, O. Epidemiologia da lepra na infancia. [Epidemiology of leprosy in infancy.] *Rev. Brasileira Leprol.* 4 (1936) 319-332.

The study, first published in the report of the IV Conferencia Sud-Americana de Hygiene, Microbiologia e Pathologia, held in Rio de Janeiro, July, 1929, was carried out at the Asylo Santa Therezinha, of São Paulo. After describing the organization of the asylum (a preventorium for leper children) the authors classify the 147 children interned from September, 1927, to June, 1929, as follows: lepers 8 (5%), suspicious 5 (3%), carriers 3 (2%), and healthy 131 (89%). The first 16 are considered capable of transferring leprosy (epidemiological index 10.8%). Of the 8 lepers only two showed their first signs of the disease after being interned; the disease started in them with achromic spots, at first hypoaesthetic but later anesthetic, in which typical bacilli were found. The authors discuss the prodromal symptoms of the disease, saying that without skin lesions it is impossible to diagnose or even to suspect it. They report excellent results with chaulmoogra treatment in the initial cases. The three carriers were treated and became negative. The authors discuss whether these carriers were lepers or immune; in the six years since they became negative they have not shown any skin signs of the disease.

—H. C. DE SOUZA-ARAÚJO

BALIÑA, P. A proposito de clasificacion de las formas de lepra. [The classification of leprosy.] *Rev. Argentina Dermosif.* 19 (1935) 241-247.

With the object of presenting the arguments of Wade for placing tuberculoid leprosy within the classification of the Manila Conference (1931), and to correct certain errors of reproduction of the conclusions of that conference, the author restates and comments on the classification. He agrees that the word leproma, with the restricted meaning of "tumoral leprous formation," should be applied to the nodular type of leprosy. Concerning the term "papule" he says that in dermatology it is a "resolving" efflorescence and strictly speaking not a feature of leprosy, and offers the terms "papuloid" and "micropapuloid" instead of "papular" and "micropapular" used by Wade in describing tuberculoid leprosy. The term "lepride" was not mentioned in the Manila conference, but it is useful in the original meaning given it (Besnier, Arning) to indicate leprous macules. Finally he notes Wade's view that tuberculoid leprosy should be classified as a variety of the neural type of leprosy.

—M. B. L.

INNES, J. R. Occupation and leprosy. *Med. Jour. Australia* 1 (1936) 815-818.

Of 190 cases under the writer's care in the Poona district, India, 131 (69%)

belong to the lower castes and outcastes, while 42 (22%) belong to the middle and high castes; the remaining 17 (9%) are Mohammedans and others. The principal occupations were agriculture, shopkeeping, transportation, teaching, domestic work and mill labor. Leprosy is a disease closely bound up with human intercourse; oft-repeated momentary contacts as well as prolonged contact serve to produce infection. Lepers often continue in their occupations for long periods, serving to disseminate the disease. An attempt is made from these considerations to bring out starting points for control measures. —M. B. L.

VESPOLI, M. Estudo synthetico dos mais importantes factores favorecedores da infecção hanseniana e modeladores da evolução da leprose. [Synthesis of the most important factors favoring infection and the course of leprosy.] *Rev. Brasileira Leprol.* 4 (1936) 341-358.

The author speaks of the agent of leprosy as the "leprosy virus" and believes in a filtrable form of it. He offers various hypotheses upon the pathogeny of leprosy [not based on facts], and is inclined to believe in the hereditary nature of the infection. Studying the individual's natural resistance, he believes that it is hereditary but modifiable by the environment; also that there is a hereditary susceptibility to the infection. There is an acquired immunity, as evidenced by the leprolin reaction, which is considered to be an allergic symptom. The author also believes in superinfection, and that in some instances treatment is a modification factor of the infection, being not rarely the cause of the exacerbation of the disease.

—H. C. DE SOUZA-ARAUJO

MOSTERT, H. v. R. Leprosy: some aspects of modern research. South Africa *Med. Jour.* 9 (1935) 459-463.

This is mainly a historical and general consideration of the leprosy problem at the present day, but contains some South African experience. The probable sources of infection were traced in 372 cases; 64% were house infected, and the remaining 36% gave histories of previous close association with lepers. The age factor is illustrated by the fact that 230 (54%) of 426 children of lepers contracted the disease, and 78% of all infections occurred before the age of 20; the parents had the nodular type in 59%. Among 385 married lepers, of whom 43% were nodular cases, only 33 (9%) gave histories of conjugal infection. Hydnocarpus preparations are advised in treatment; trypan blue was found to be too toxic, although more effective than methylene blue or brilliant green.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 859.]

PLANTILLA, F. Transmission of leprosy. I. Sites of the single leprotic lesions. *Month. Bull. Bur. Health (Manila)* 16 (1936) 137-141.

In connection with the question of the transmission of leprosy, the author presents his observations of single lesions, definitely established as of leprotic nature, in 266 cases in the Cebu skin dispensary. The most frequent sites of these lesions were the cheeks, elbows, exterior surface of forearms, buttocks, and knees; they were also frequent though less so on the arms and forearms, hands, fingers, legs and feet; seldom on the chest, abdomen, back and thigh; and rare in the flexures of the elbows and knees. He believes that these lesions were not metastatic, but the site of primary infection, his reasons for this belief being discussed at some length. It is concluded that infection takes place indirectly from the surroundings (chair, floor, bedding, and soil) and directly through skin-to-skin contact when the child is being carried. —M. B. LARA

BROWN, J. A. K. Some dietetic factors in leprosy with special reference to B avitaminosis. *West African Med. Jour.* **8** (1935) 1-7.

The author quotes various authorities regarding the importance of diet in leprosy, and advocates the administration of vitamins. In the Uzuakoli Leper Colony, Nigeria, he found the diet adequate in 57%, marginal in 20% and inadequate in 22.5% of the cases. He gave vitamin B in the form of marmite and an extract of rice polishings, but states that no definite improvement was observed, although 43% did show gain in weight.—[From abstract in *Trop. Dis. Bull.* **33** (1936) 614.]

TAJIRI, I. Zur Frage der Schwangerschaft und Geburt bei Leprosen. [Pregnancy and childbirth in lepers.] *Japanese Jour. Dermatol & Urol.* **39** (1936) 11 (supplement; abstract in German).

On the ground of detailed data on 76 inmates of the Aiseien leprosarium, the author has come to the conclusion that pregnancy and childbirth constitute a danger as regards the aggravation of leprosy, and that there is a possibility of the outbreak of the disease in persons in whom it is in the latent stage. He holds that so far as possible lepers should avoid pregnancy.—[From translation by Dr. A. C. Santos of abstract.]

ITAKURA, T. Zahnärztliche Untersuchungen bei Leprakranken. II. Bericht: Klinische Untersuchungen ueber Pyorrhoea alveolaris bei leprakranken Formosachinesen (Fokine-Stamm). [Pyorrhoea in leprosy.] *Taiwan Igakkai Zasshi* (1935) 827-835 (summary in German).

This brief note records that pyorrhoea was met with in 52 percent of leprosy cases, and was more common in nodular than in nerve cases and in women than in men. It was also more frequent in lepers than in nonlepers.—[From *Trop. Dis. Bull.* **32** (1935) 863.]

VALLE, S. Prophylaxia da cegueira na lepra. [Prevention of blindness in leprosy.] *Brasil-Med.* **50** (1936) 265-275.

The insidious, chronic evolution of leprosy may lead to blindness in spite of every care and precaution. If the posterior segment of the eye is not involved there may be perception of light for a long time, in fact until the globe atrophies or swells to a staphyloma. According to the author, infection enters anteriorly, by way of the anterior ciliary arteries through anastomoses with the posterior vessels of the conjunctiva, extending thither from the supraciliary or palpebral region or neighboring site. Thus is explained the predilection for the anterior segment and the early localization between the recti tendons and the cornea. For prophylactic purposes the author employs perilimbal cautery, peritomy, and removal of nodules followed by cautery of the surface. For active lesions he favors copper salts. In acute crises with severe and persisting pain he finds trypan blue, given by the method of Muir and Chatterji, quite satisfactory. He recommends dark glasses in cases of rupture of the iris, to reduce photophobia and protect the insensitive cornea from dust and wind.—[From abstract in *Trop. Dis. Bull.* **33** (1936) 613.]

DE SOUZA CAMPOS, N. Casos raros de amyotrofia na lepra. [Rare cases of amyotrophy in leprosy.] *Ann. Paulista Med. e Cir.* **31** (1936) 350 (abstract).

The author, speaking of the difficulty of making a diagnosis in incipient cases, discusses the pathogeny of the initial lesions and the importance of the history. Classical examples of amyotrophy are presented, and of three cases with amyotrophy

confined to the thenar region and one in which it was localized to the tibioperonea region.—[From translation by Dr. M. B. Lara of abstract.]

KAMBLE, S. T. Syphilis and leprosy. *Indian Jour. Ven. Dis.* 2 (1936) 37-38.

The author points out the danger of mistaking leprosy for syphilis, and cites two cases from his experience in which that occurred. One was tuberculoid leprosy in reaction; the antisyphilitic treatment (including potassium iodide) might have been disastrous if persisted in. The other was an open case. It is insisted that serological tests should be done in all cases of supposed (clinical) syphilis, and leprosy must be kept in mind when examining a patient with macules. Early cases of the neural type are certain to be seen by those treating venereal diseases.

—H. W. W.

BASOMBRI, G. Un caso de lepra de difícil diagnóstico clínico. [A case difficult of diagnosis.] *Rev. Argentina Dermatosis.* 19 (1935) 248-255.

A patient without suspicion of leprosy, with normal peripheral nerves, and without rhinitis had marked trophic lesions of the four extremities; an accident had caused amputation of some of the fingers. Hansen's bacilli were searched for without success in 23 regions, according to the Carville scheme, and in the nasal mucosa. The clinical diagnosis was made on the basis of the type and distribution of the alterations of sensibility, supported by the biologic tests (ionization with pilocarpine, histamine test, etc.) and the demonstration of noncultivable acid-fast bacilli in an inguinal lymph node and the sequestrum of a phalangeal bone.

—[AUTHOR'S ABSTRACT, translated.]

CLOUSTON, T. An investigation into the thick blood-drop method of diagnosis in leprosy. *Med. Jour. Australia* 2 (1936) 431-432.

The author examined the blood of 91 cases of leprosy in Naru according to the technique of Sardjito and Sitanala, which consists of drying under a cover glass a thick blood drop obtained from the finger, dehemoglobinizing in distilled water and drying again; the stained smears are decolorized with 5% sulphuric acid and counterstained with aqueous methylene blue. The cases were as follows: 18 nodular, 34 neural and mild cutaneous, 21 inactive or neural, 10 suspects, and 8 children of leper parents. Of the nodular cases 14 gave positive results, and of the neural and mild cutaneous cases 2; all the others were negative. The author inclines to favor this method of examination as simpler than the preparation of a skin section, but states that it is not suitable for early and latent cases. —M. B. L.

PIETER. Une nouvelle méthode de démonstration du bacille d'Hansen dans quelques lésions non ouvertes de la peau. [New method of demonstrating bacillus in closed skin lesions.] *Rev. Méd. et Hyg. Trop.* 27 (1935) 233-234.

The skin over a lesion should be cleaned with ether and acetone, scarified as for von Pirquet's reaction, a small cup applied and the drop of serum thus obtained on a slide stained with eosine and methylene blue, each 10 cgm., by Wright's method.

—[Abstract from *Trop. Dis. Bull.* 33 (1936) 606.]

LAGOUDAKY, S. Preliminary note on self-inoculation of leprosy. *Jour. Trop. Med. & Hyg.* 39 (1936) 81-83.

This is a remarkable account of the intravenous inoculation of the author on three occasions with 3 gr. [sic. ? cc.] of blood from a Greek leper twice and a native leper once. A month later he began to get pain in one foot, ten days later two small subcutaneous lepromas appeared on his hands and other lesions during the

following month, including anaesthetic spots. He states that lepromas are forerunners of the disease in which microbes are found, and writes of the "ultravirus." He does not clearly say whether bacilli were found in his lesions, but mentions that they cleared up under intradermal treatment begun five months after the first inoculation on June 9th, 1934. His colleagues apparently agreed with the diagnosis of early leprosy.—[Abstract from *Trop. Dis. Bull.* 33 (1936) 609.]

ROSE, F. G. The curability of leprosy. *Lep. Rev.* 5 (1934) 152-160.

In British Guiana 801 cases of leprosy were under observation from 1926 to 1934. Of these 138 died, 16 left the country and 647 remained for further observation; 180 of them were spontaneously arrested and 467 underwent active treatment, 381 for more than a year. There were 257 early and 124 advanced cases in this latter group. In the early cases 76 are arrested, 66 quiescent, and 66 improved; of the advanced cases, 22 arrested, 15 quiescent, and 16 improved. It is further stated that of 142 early quiescent and arrested cases and 37 advanced cases, 100 from the former and 10 from the latter have completely recovered. He defines "recovery" as arrested and quiescent cases where the function is fully restored, and "cure" when a case has remained arrested for at least six consecutive years. Chaulmoogra-group oil or esters are used, the treatment being continued for six years after arrest; only 14% relapses have occurred.

[This paper was the subject of a symposium in the same and the succeeding numbers of *Leprosy Review*, in which comments were made by MacLeod, Muir, Welch, Wade, Maxwell, Whitaker, Sharp, Wayson, and Mitsuda, the contribution of the last-named being in the form of a separate article. These comments should be examined in the original by anyone interested.] —M. B. L.

ROSE, F. G. The curability of leprosy. *Lep. Rev.* 7 (1936) 11-14.

The author comments on the contributions to the symposium published in connection with his first article. He states that in British Guiana *Hydnocarpus* oil and its derivatives are not used exclusively, as they have obtained there equally good results with the esters of *Carapa guianensis*. For the past five years there have been clinics where the incipient and closed cases are treated, without medical advice as to nourishment, exercise, etc., so that the only therapeutic factor has been the special drugs administered and the application of local irritants. The percentage of recovery without deformity is very low. The author has seen and examined almost all the known cases of leprosy in British Guiana for the last twenty years, and has had occasion to examine all the cases recovered according to a method very similar to Wade's.—[From translation by Dr. M. B. Lara of abstract in *Bol. Off. Sanitaria Panamericana* 15 (1936) 387.]

ROSE, F. G. Treatment of out-patients at the British Empire Leprosy Relief Association Clinics in British Guiana. *British Guiana Medical Annual*, 1936.

The results of treating with *Hydnocarpus wightiana* oil two groups of 113 and 73 cases with incipient leprosy in the outpatient clinic of British Guiana from 1927 to 1935 tend to show that, with regular treatment for long duration (6 years or more), early cases are, with the more advanced ones, equally amenable to treatment. None of those adequately treated in the above manner had become positive up to 1936. —M. B. L.

DREWE, F. The treatment of leprosy. *South African Med. Jour.* 10 (1936) 655-658.

The author's treatment consists primarily of institutional care which restores

the mental outlook of the patient, with the usual general treatment, and secondarily of the treatment of leprosy itself. The resistance of the individual case is determined by the sedimentation test, lest the antileprotic drug be pushed when the resistance is breaking down. On account of the frequency of syphilis among his cases the Wassermann test is done as routine, neosalvarsan being given to the positive cases; of 228 Wassermann-positive cases out of 825, 50% were discharged as a result of the treatment. Emphasis is laid on correction of oral and nasal sepsis, together with the chronic gastritis and cholecystitis that, he maintains, so often follows them. He considers chaulmoogra oil, the most important drug, gives best results when given by inunction and by mouth. Lepra reaction is treated by purgative and sodium bicarbonate followed by ephedrine hydrochloride injections to relieve the pain. Protein shock therapy, using sterilized milk given up to 10 cc. intramuscularly twice a week, has given favorable results. —M. B. L.

PORTUGAL, H. A orientação do tratamento da lepra em dispensário. [Treatment of leprosy in dispensaries.] *Arch Hyg. (Brasil)* 6 (1936) 75-81.

This article covers the field of the treatment of leprosy in a way useful to one about to take up such work for the first time, but contributes no new observations. —H. W. W.

KEIL, E. Zur Behandlung der Lepra mit Jod-Antileprol. [Treatment of leprosy by iodized antileprol.] *Arch. f. Schiffs- u. Trop.-Hyg.* 39 (1935) 188-199.

The author deals with treatment by iodized chaulmoogra esters, advocating the addition of 10% instead of 0.5% iodine; from 0.5 to 3 cc. is given once or twice weekly, largely by the intradermal method. Rise of temperature or congestive dermal reactions are contraindications for continued treatment. Of 273 cases, 110 were treated for over one year and 163 for over two years; 20% were cutaneous, 57% neural and 23% mixed cases; 21% were early and 75% more advanced. The results were that 13% became bacteriologically negative, 44% showed distinct improvement, 41% were stationary and 2% became worse.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 869.]

COLE, H. S. AND CARDOSO, H. T. Estheres ethylicos de chaulmoogra. [Ethyl esters of chaulmoogra.] *Rev. Brasileira Leprol.* 4 (1936) 333-340 (summary in English).

The factors involved in esterification of chaulmoogra oils are discussed, including experiments on the influence of sulphuric acid as a catalyst on reaction rate. The variation of refractive index and optical rotation of ethyl esters with percent of free fatty acid is demonstrated. Methods of esterification and purification of ethyl esters are given as well as directions for the preparation of creosoted and iodized esters. —[AUTHORS' SUMMARY.]

TOLENTIONO, J. How effective is the treatment of leprosy with the chaulmoogra oil group? *Month. Bull. Bur. Health (Manila)* 16 (1936) 48.

In disagreement with the dictum "once a leper always a leper," the author presents the results of five years experience with chaulmoogra treatment dealing especially with the 279 patients admitted in 1929 to the Eversley Childs Treatment Station in Cebu. Of the total, 194 had been transferred to the Culion colony, 9 died and 1 absconded. Of the 75 that remained in the station, 37 (one-half of this group, or 13% of the total) had been paroled and 9 more were negative and awaiting parole; 22 others had improved moderately to markedly, 5 had remained stationary, and only 2 were worse than when admitted. Even one-quarter of the

cases that were transferred to Culion were improved in some degree at the time; and the rest were stationary, most of them having been under treatment only a year or less. Of the 9 that had died, 3 were negative and 4 were improved at the time of death. The author is strongly convinced that the present treatment is not useless, and advocates its continuation as the best so far available, though he acknowledges the futility of expecting the eradication of the disease by means of it alone.

—M. B. LARA

REENSTIERNA, J. Therapeutic tests with an anti-leprosy serum (in Sweden and Ethiopia). *Acta Med. Scandinavica* **88** (1936) 399-406.

The author's serum is made by injecting sheep repeatedly with acid-fast bacilli, including those of Kedrowsky and Paldrock and a very similar one cultivated by the author himself. It has been used in four cases at the Jarvso leprosarium and in over 30 cases at Addis Ababa in Ethiopia, and it is claimed that in all patients except those who were moribund the ulcers healed, nodules subsided and in 65% of the cases sensibility returned in fingers and toes. The author says that only "a very inconsiderable beginning" has yet been made with the trial of his serum.—[From abstract in *Trop. Dis. Bull.* **33** (1936) 614.]

TAKINO, M. AND MIYAKE, S. Die Veränderung der vegetativen Nerven bei der Lepra, besonders bei der infiltrativen Form. [Changes in the vegetative nerves.] *Acta Scholae Med. Univ. Imp. Kioto* **18** (1935) 85-115.

This is a well illustrated account of the histology of leprotic lesions with descriptions of the formation of globi containing numerous bacilli and the distribution of the organisms in the nerves.—[Abstract from *Trop. Dis. Bull.* **33** (1936) 608.]

Bosq, P. Diagnostico histologico de las neuritis leprosas mediante la biopsia. [Histological diagnosis of leprosy neuritis by biopsy.] *Rev. Argentina Dermatosisif.* **22** (1936) 223-243.

Leprous neuritis presents three different inflammatory types, the leprotic, the amorphous and the tuberculoid forms. To these forms there may be added a proliferative inflammation of the epi- and perineurium, in which case the lesions have to be interpreted from anatomico-clinical criteria. The destruction of the nerve fibers occurs very early, their integrity being conserved longest in the amorphous form. A rapid inflammatory process is accompanied by focal necrosis. Spontaneous cure of the local condition is produced by sclerosis and calcification, as in tuberculosis.—[From translation by Dr. M. B. Lara of author's summary.]

GRIECO, V. Aspectos histologicos das nevrites na lepra. [Histological aspects of leprosy neuritis.] *Rev. Brasileira Leprol.* **4** (1936) 271-305 (summary in English).

The author reports observations on the pathology of the neuritis in leprosy from the material of the section of pathological anatomy of the Departamento de Prophylaxia da Lepra de S. Paulo, describing changes seen in the nerves in nodular leprosy, in pure neural leprosy, in tuberculoid leprosy, and in the terminal nerve filaments of skin lesions (macules, lepromata, etc.). In nodular leprosy the infiltration is essentially composed of vacuolate Virchow cells with plenty of Hansen's bacillus; the nerve fibers are compressed and destroyed secondarily. In pure neural leprosy there are seen, between the nerve fibers, small foci of infiltration, mainly lymphocytic, with late fibrosis; calcareous salts may be deposited. Bacilli are generally rare. In tuberculoid leprosy the nerve lesions are constituted essentially of epithelioid cells, giant cells and lymphocytes, to which may be added caseation

and calcification. Bacilli can rarely be demonstrated. The nerve filaments that terminate in the skin lesions commonly show, first, leprotic infiltration around the perineurium, which later is destroyed, and the nerve fibers are invaded, compressed and ultimately destroyed.

—H. W. W.

YUYAMA, H. Ueber die histologische Untersuchung der Glykogenverteilung in der leprösen Haut, mit besonderer Berücksichtigung der Beziehung zwischen der Funktion der Schweißdrüsen und der Schwankung des Glykogens. [Glycogen researches in leprous skin.] Japanese Jour. Dermat. & Urol. **37** (1935) 811-886 (supplement, pp. 134-136; summary in German).

The author reports his histological researches on glycogen destruction in the skin of leprosy patients with special reference to the sweat glands. When the function of the sweat glands is increased the glycogen decreases in them, and he has investigated the amount of glycogen destruction in various stages of 103 leprosy patients. In the maculo-anæsthetic form in all stages he found no glycogen in the epidermis except in the prickle cells, and also none in the lepra cells and other leprous parts. In nodular cases he found similar deficiency of glycogen, and in the nerve and leucodermic forms he found none in either the epidermis or other parts, including the sweat glands.—[From *Trop. Dis. Bull.* **32** (1935) 866.]

COWDRY, E. V., HEIMBURGER, L. F. AND WILLIAMS, P. S. A spectrographic study of leprous lesions. American Jour. Path. **12** (1936) 13-29.

Starting from the idea that there might be significant modifications in Na, Ca, Mg, P, Fe in leprous tissues as compared with normal ones, the authors have studied by the histiospectrographic method of Scott skin lesions obtained by biopsy from five patients at the Carville leprosarium, using for control skin from five non-leprous autopsy subjects. The method used consists, briefly, of burning a small portion of the tissue in a high-frequency spark and photographing the emission spectrum; the density of the lines of each element is then measured. All of the leprous tissues showed less intensity of the Ca lines as compared to the controls, while those of Na, P, Fe, and Mg were more intense. The most significant feature is that the P:Ca ratio was, on the average, probably three times those of the normal controls. There was a fair correlation of the P:Ca ratio with known duration of the disease and the volume of the leprous cells in the tissue.

—M. B. L.

PRUDHOMME, R. O. Fixation *in vivo* du bleu de méthylène par les bacilles lépreux. [Fixation of methylene blue by leprosy bacilli *in vivo*.] Compt. rend. Soc. Biol. **119** (1935) 1326-1328.

The author reports finding that the potential oxido-reduction of lepromes is not materially different from that of normal tissues, and that the substances which fix methylene blue to lepra bacilli belong to a series of substances which can be extracted by hot alcohol.—[Abstract from *Trop. Dis. Bull.* **32** (1935) 871.]

HISAMACHI, Y. Early tissue reactions in the lungs of rabbits after intravenous injections of acid-fast bacilli. Part. 5. Experiments with Dr. Ota's so-called acid-fast bacilli of human lepra. Jour. Oriental Med. **22** (1935) 69-70 (supplement; summary in English).

The early tissue reactions of the lung in rabbits to intravenous injections of human leprosy bacilli is described, the acid-fast bacilli isolated by Ota being used. After phagocytosis of the bacilli, monocytes formed a tubercle with considerable thickening of the alveolar septa. After seven days bacilli could not be found, and

after a month tubercles were no longer recognizable.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 865.]

WATANABE, Y. Experimental studies on animals concerning leprosy. Report II. Inoculation tests with human leprosy (Part I). *Kitasato Arch. Exper. Med.* 12 (1935) 139-153.

Experimental inoculations of rats with human leprosy tissues are recorded. Subcutaneous inoculations were followed by cellular and connective tissue formation, with some giant cells and acid-fast bacteria, no lepra cells, but the nodules healed and the bacilli disappeared in 71 to 400 days. Intravenous inoculations produced no nodules or other changes. Eye inoculations produced only temporary inflammation and nodule formation without any leprosy changes. The degree of reaction is in proportion to the amount of material injected.—[Abstract from *Trop. Dis. Bull.* 32 (1935) 865.]

HU, K. Studien über den Entwicklungsmodus der Bakterien bei Einzelkultur auf Nährboden film. I. Mitteilung. Beobachtungen über den Entwicklungsmodus des *Mycobacterium* sowie die biologische Bedeutung seiner Granula. [Studies on the development of bacteria in single-cell cultures. I. Development of mycobacteria and the significance of their granules.] *Japanese Jour. Exp. Med.* 14 (1936) 29-58.

The author summarizes his observations on single-cell cultures as follows: (1) The tubercle bacillus (especially the avian type) shows several modes of development. (a) Transverse segmentation and germination from lateral branches of the ends of the segments. (b) Germination of a new rod from a granule located in the end of a bacillus. (c) Formation of a lateral branch from the side wall of a bacillus (dichotomy). (d) Exceptionally, simple transverse segmentation or fragmentation. It is concluded that the tubercle bacilli should be placed in the series of the higher fungi, like the *Actinomyces*. (2) On changing the nutrient substrate the mode of development differs strikingly. On a glycerin agar film all of the described modes are shown; in a glycerine bouillon drop no dichotomy is observed; and on a nutrient medium film of rabbit plasma and of rabbit-spleen extract multiplication proceeds almost exclusively by dichotomy. (3) Two kinds of development may be differentiated in the granular form of the tubercle bacillus: (a) the amorphous, dust-form granules that originate from the degeneration of the bacilli, and (b) the granules of a determined size, strongly refractive to light, which originate from a rich growth of the bacilli and are independent of the bacilli themselves. (4) Among the latter granules there are some which are capable of germinating and multiplying further by themselves, thus possessing the capacity to regenerate; they appear to be of essential importance in the filtrability of the organism. (5) Human leprosy bacilli in tissue culture, especially of the lymphatic glands of white rats, multiply and form globi. Therefore artificial cultivation of this organism is possible by using suitable methods. (6) The individual bacteria of the fission fungi (*Schizomyces*), multiply by typical fission (binary division), forming specific colonies from the beginning. —[From a translation by Dr. A. C. Santos of authors' abstract.]

LAI, D. G. AND CHEN, Y. W. The Wassermann and the Kahn reactions in leprosy. *Chinese Med. Jour.* 50 (1936) 702-704.

Out of 167 ambulatory cases of leprosy tested by the authors in Shanghai, 20 (12%) gave a positive Wassermann reaction, and 36 (22%) a positive Kahn test. In the Hangchow leprosarium with 78 inmates, 31 (40%) were Kahn posi-

tive. Including a previous series of 167 cases in Swatow, the authors got altogether 87 (20%) positive Kahn tests. As the incidence of syphilis is very high in the areas concerned the factors are complicated, and the authors withhold their conclusions on the results of their work.

—M. B. L.

BIER, O. G. AND ARNOLD, K. Ueber die Serologie der Lepra. II. Komplementbindung bei Lepra mit dem Tuberculose-Antigen von Witebsky, Klingenstein und Kuhn. [Serology of leprosy. II. Complement fixation with the Witebsky antigen.] Arch. f. Schiffs- u Trop.-Hyg. 39 (1935) 236-238.

Complement fixation in leprosy with the tuberculosis antigen of Witebsky, Klingenstein and Kuhn is of considerable diagnostic value.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 867.]

BIER, O. G. AND ARNOLD, K. Ueber die Serologie der Lepra. III. Die serologische Differential-diagnose zwischen Syphilis und Lepra. [Serology of leprosy. III. Differentiation between syphilis and leprosy.] Arch. f. Schiffs- u Trop.-Hyg. 39 (1935) 238-241.

Dealing with serological differentiation between leprosy and syphilis, the authors conclude that leprosy sera can give complement deviation with tuberculosis and streptothrix antigens. Complement deviation with Witebsky and Gomes antigens give with leprosy effective antigen reactions of the same kind as in tuberculosis.

—[From abstract in *Trop. Dis. Bull.* 32 (1935) 867.]

[An abstract of the first article of this series appeared in *THE JOURNAL*, 4 (1936) 405.]

RABELLO, JR. AND MACHADO, J. C. Aspectos da pathogenia da lepra tuberculoides: A soro-reação de Witebsky nessa variedade de lepra. [Pathogenesis of tuberculoid leprosy; complement fixation tests with the Witebsky and other antigens.] Rev. Brasileira Leprol. 4 (1936) 307-318.

The authors discuss various hypotheses of the pathogenesis of tuberculoid leprosy. Results with the Witebsky test in 18 cases of tuberculoid leprosy "associated with cutaneous, nerve and mixed leprosy," are given: 13 (72%) were positive. Another group of 42 cases of pure tuberculoid leprosy confirmed histologically gave the following results: 4 pretuberculoid, 2 positive; 2 lupoid type, 1 positive; 15 sarcoid type, 4 (25%) positive; 21 cases of tuberculoid leprosy from São Paulo, 4 positive (20%); total positive, 26%. Cases of cutaneous tuberculosis in Brazil give 33% positive reactions. The authors suggest the following representation: leprosy bacillus plus tuberculosis antibody equals tuberculoid tissue reaction.

—H. C. DE SOUZA-ARAÚJO

MUNEUCHI, T. Ueber die Mitsudase Reaktion bei leprösen und bei nach nicht an Lepra erkrankten Kindern. [Mitsuda's reaction in leprosy and healthy children.] Japanese Jour. Dermatol. & Urol. 39 (1936) 10 (supplement; abstract in German).

The author tested with the Mitsuda reaction 50 children in the Oshima leprosy sanatorium, including 31 with leprosy, 16 contacts without evidence of the disease, and 3 healthy children, and their parents. (a) In the healthy children the reaction was positive. (b) Those with the nodular form of leprosy all gave negative reactions, with the exception of one in which there was an incomplete reaction. On the other hand the reaction was always positive in the cases with neural and macular leprosy. (c) The children that had not yet shown evidences of the disease were positive with the exception of two with incomplete reactions. The percentage of positive reactions

appears to be higher in females than in males. It is more frequently and strongly positive in children of whom only one parent has the disease than when both parents are leprosy. The longer the time the children had been in contact with their leprosy parents, the more frequently positive was the reaction. (d) In children with leprosy whose parents are healthy, the reaction was more strongly positive than in those whose parents are leprosy.—[From translation by Dr. A. C. Santos of abstract.]

PEREIRA, P. C. R. Contribuição ao estudo da reacção de Bargehr. *Alergia e imunidade activa contra a lepra*. [Bargehr's reaction and leprosy.] *Brazil-Med.* 49 (1935) 576-587.

As a result of his tests with Bargehr's "lepromine" the author has concluded that it is negative in children up to 2 or 3 years of age, as they are susceptible to infection; repeated inoculations transform the negative into a positive reaction, and this is proportional to the number of injections; persons harboring the bacilli and developing the disease react positively; a positive reaction is probably due to antibodies resulting from contact with the bacillus; a positive reaction with absence of symptoms in a person in constant contact with lepers denotes allergy and probable immunity. In brief, the findings are analogous with those of von Pirquet in the tuberculous and others exposed to infections.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 856.]

PORTUGAL, H. Diagnostico da lepra laboratorio. [Laboratory diagnosis of leprosy.] *Arch. Hyg. (Brazil)* 6 (1936) 37-65.

Bacteriological examination: Location of the bacillus in the nasal mucosa is not so early as to justify laying much stress on this examination. To collect material, scraping the septum with an ocular curette is recommended. Examination of the skin is of the greatest value; material may be collected by scarification or biopsy. Examination of material from the lymphatic glands has been decisive in many doubtful cases. Examination of the blood as a method of diagnosis is of little value; In 150 cases of various clinical forms three were found by the thick film method.

Histological examination: The author calls attention to the importance of this method; it is necessary for the diagnosis of the tuberculosis variety of nerve leprosy. Technique is discussed. In searching for the bacillus in sections the author recommends Klingmüller's method. The leprosy changes in the skin are lepromata and leprides, the latter being simple (macules) or tuberculoid. The tuberculoid lepride may be follicular (as in lupus vulgaris), sarcoidic (like Boeck's sarcoid) or pretuberculoid (form of transition to simple leprides).

Cutaneous tests: The Mitsuda reaction has given results similar to those reported by Hayashi; the reaction is stronger in tuberculoid leprosy. Regarding Bargehr's reaction the author quotes Cerqueira Pereira's findings in Bello Horizonte. The two reactions have prognostic value. The technique of the histamine test is discussed.

Serum diagnosis: The Rubino reaction though specific is not sufficiently sensitive to be of diagnostic value. The sedimentation index is of value to guide the treatment, to choose the medicine, to indicate the doses to be injected, to determine temporary suspension of treatment, and to avoid leprotic reactions, etc. The author describes the technique of all these methods of examination. The object of this publication is to put together material scattered in bulletins and monographs and is also designed to aid those in charge of laboratory activities of leprosy services, which are having great development in Brazil.

—[From AUTHOR'S ABSTRACT.]

DE BEAUREPAIRE ARAGÃO, H. Tentativas da inoculação de lepra humana em *Didelphidoes*. [Attempts to infect opossums with human leprosy.] *Brasil-med.* 49 (1935) 267-268.

This investigation was the outcome of a statement by Boyé in 1931 that he had seen in Cayenne an opossum (*Philander cancrivorus*?) with lesions resembling those of leprosy—emaciation, loss of skin in patches, absence by amputation of terminal phalanges, and enlarged glands in different parts of the body, the inguinal containing acid-fast bacilli in groups of four to eight. The author has inoculated 55 opossums, *Didelphis aurita*, the commonest species in Rio de Janeiro, with fragments or emulsions of lepromata, or pus rich in bacilli; 47 were inoculated subcutaneously, 5 intraperitoneally, and 1 each in the pleura, the nose and into a bone. He has found no evidence of a special susceptibility of the opossum to leprosy, though the inoculated organisms persist for a long time (six months), and may perhaps show in greater numbers than in the original material. No difference was observed in this respect between adult and young animals.—[From abstract in *Trop. Dis. Bull.* 32 (1935) 860.]

KAMATSU, H. [Further on the Takata reaction and the erythrocyte sedimentation rate in lepers.] *Japanese Jour. Dermat. & Urol.* 38 (1935) 140. (Abstract section).

The Takata's reaction, tried first on 31 nonleprous patients, gave negative results. In 56 lepers, however, there was a quite distinct parallelism between the degree of positiveness of the reaction and the velocity of sedimentation of the red blood cells. In summary, the symptoms of patients in whom the reaction was always positive on repeated trials were distinctly worse than those of the Takata-negative patients. No specific relation was observed between the results of the reaction and the type of the disease. Though the parallelism between the two tests was quite distinct it was not always so; the Takata reaction, the author believes, depends principally upon the albumin-globulin quotient, while the sedimentation rate is influenced by many factors. In 23 cases in which the duration of the disease was more than ten years the results were always positive, irrespective of the form of the disease and symptoms. It was thus established that the liver of each of these patients was more or less damaged, and the albumin-globulin quotient changed.—[From translation by Dr. A. C. Santos.]

VILLELA, G. G. AND CASTRO, A. Estudos sobre a biochimica da lepra. [Biochemistry of leprosy.] *Brazil-med.* 50 (1936) 1-2.

The blood cholesterol in 55 cases of leprosy tended in general toward a decrease, most distinct in the cutaneous and mixed forms. In all forms there was a progressive increase with improvement of the disorder, though the full normal amount was not reached. In females the cholesterolemia was slightly higher than in males. There was no increase with chaulmoogra treatment, as claimed by some authors. The free cholesterol : cholesterol esters ratio is increased in mixed forms, less in neural, lower yet in incipient cases; markedly increased in cases with 2 to 5 years duration, and falls again with the increase of the period.—[From translation by Dr. M. B. Lara of abstract in *Rev. Brasileira Leprol.* 4 (1936) 105.]

VILLELA, G. G., CASTRO, A. AND ANDERSON, J. VAN D. Blood lipids in leprosy. *Jour. Trop. Med. & Hyg.* 39 (1936) 126-127.

In 100 cases of leprosy examined the average total blood lipids were increased and the cholesterol values were lower than normal. The clinical type of the disease

and treatment with chaulmoogra derivatives do not influence the lipemia. Iodine values were within the lower limits of normal and the fatty acid number was in the upper average range.

—[AUTHORS' SUMMARY.]

LAMPE, P. H. J., MOOR, C. E. AND VAN VEEN, A. G. Ratten-lepra. Vijfde mededeeling. "Modder-lepra" van witte ratte. [Rat leprosy. V. "Mud leprosy" of white rats.] *Geneesk. Tijdschr. Nederlandsch-Indië* **76** (1936) 2204-2227 (summary in English).

The suggestion derived from endemiological observations that the organism of rat leprosy is present saprophytically in the soil led the authors to investigate the matter. White rats were shaved to the point of slight bleeding and permitted to come in contact with, or were rubbed with, mud taken from near houses in localities heavily infected with rat leprosy. One lot of 95 rats was used; in addition some were put on a diet deficient in vitamins A, B, and B₂. For control, 300 rats from the same source were used without shaving. As a result of the adverse conditions, many rats died; the survivors were observed for 1 to 1-1/2 years. Of the 56 survivors in the experimental group, 11 developed lesions characteristic of rat leprosy, while none of the 231 survivors from the control group developed the infection. The lesions appeared in the rats on deficient diet, particularly that deficient in B₂, and in those that had been rubbed and not in those that had merely been shaved. The authors believe that the deciding factor for the development of the lesions was the lack of the vitamin B complex. They are not decided whether the micro-organism was living saprophytically in the skin of the rat or in the mud.

—M. B. L.

WAYSON, N. E. AND MASUNGA, E. Rat leprosy. Observation concerning transmission of the infection through the nose. *Publ. Health Rep.* **50** (1935) 1576-1581.

Acid-fast bacteria have been found frequently in the noses of wild rats infected with the leprosy-like disease of rats, and likewise in white rats experimentally infected by subcutaneous inoculation. Normal white rats in prolonged direct or indirect contact with infected rats harbored acid-fast bacteria in the nose and developed the disease under the conditions of the experiments. Rat leprosy has developed in white rats subsequent to the instillation of a suspension of rat leproma into the nostril without trauma to the nasal mucous membranes.

—[AUTHORS' SUMMARY.]

PRUDHOMME, R. O. Le glutathion réduit dans la lèpre murine. [Reduction of glutathion in rat leprosy.] *Compt. rend Soc. Biol.* **121** (1936) 1167-1169.

At the suggestion of M. Marchoux the author has examined to ascertain if the reduction in the amount of glutathion in the tissues of tuberculous patients is also present in the case of rat leprosy. He concludes that this substance is not much reduced in the livers and spleens of infected rats unless these organs are seriously involved in the disease, when there is a considerable fall.—[Abstract from *Trop. Dis. Bull.* **33** (1936) 610.]

BOOK NOTICES

MOLESWORTH, E. H., M.D., CH.M. (Sidney). *An Introduction to Dermatology, with a Chapter on the Theory and Technique of X-ray and Radium Therapy.* Foreword by Prof. Josef Jadassohn. J. & A. Churchill, Ltd., London, 1937, pp. 520, price 25s.

This moderate-sized volume, one of the publishers' Empire Series, is described by Jadassohn in the foreword as overcoming happily the difficulties of combining the older descriptive, morphological dermatology and the more modern biological aspects of the subject; also as not based on any national school of thought but influenced by the French and German schools as well as the English. Throughout the volume the descriptive matter is terse and kept to essentials; the number of illustrations seems rather limited.

With regard to leprosy, the author states that it:

... is generally dealt with ... more as a curious survival than as a disease providing a serious problem today. But in the East and in the Pacific, leprosy is a really active menace. ... In these circumstances I have provided a much fuller description of leprosy that is usually given in a text book on diseases of the skin.

Despite the statement quoted, most of the topics in the section on leprosy are dealt with briefly, as is proper in such a book.

It is pointed out that Biblical accounts of supposed leprosy do not give any of its characteristic signs and symptoms, not even anesthesia. With regard to the decline of the disease in mediaeval Europe, the author disbelieves in the supposed effect of the regulations then enforced, and favors as the major influence the evolution of racial resistance by the elimination of the more susceptible stock. In the discussion of the etiological agent there is a suggestion of a hope that the hypothesis of a filterable form may be correct and that some of the puzzling features of the disease may be explained thereby. Besides the usual predisposing causes is mentioned inheritance of family susceptibility, and influenza is given as a disease that particularly causes diminished resistance. The importance of childhood susceptibility is recognized, but compulsory segregation is said to be productive of harm rather than good.

The great variability of the "incubation period" and the inconsistency of prodromata are pointed out, and the primary lesion is discussed at relative length. The later signs and symptoms depend upon "whether the skin or the peripheral nerves are most affected" (in this connection nothing is said of the factor of resistance), and this determines the two types, which are called "cutaneous" and "neural," in line with recent practice. Both forms are described succinctly. It is said that in some cases of the neural form, "after a tuberculoid primary lesion, perhaps followed by secondary lesions of the same type," erythematous and other dermal manifestations develop; also that the "mixed type" is the commonest of all, for it is "rare for an anesthetic case to evolve without occasional nodules in the skin"—both of which statements seem to the reviewer desirable of clarification. Tuberculoid leprosy is looked upon as a form apart, which was the usual opinion when this book was written.

The histology of the lesions is gone into somewhat fully, and in the main

correctly, though "epithelioid" is sometimes used where presumably "macrophage" is meant, and the classical lepra cells are said to arise from endothelial cells. The tuberculoid form, to the literature of which the author has contributed, is dealt with here, and it is stated that it is indistinguishable from Boeck's sarcoid, lupus pernio and granuloma annulare.

From the discussion of diagnosis, which is particularly detailed, it appears that the author does not use the scraped-incision method of obtaining material for bacteriological smears. The prognosis in leprosy, it is pointed out, is serious but better than before the development of modern improvements in treatment. The latter subject, deliberately, is only skirted, though quite a little is said of Muir's use of potassium iodide as an aid in therapeutics.

—H. W. W.

SERRA, PROF. ALBERTO. *Oltre Trent' Anni di Lotta Antileprosa in Sardegna.* [Fighting Leprosy in Sardinia for over Thirty Years.] Cagliari, Prem. Tip. Giovanni Ledda, 1931, 68 pp., with two large tables.¹

This work is a record of the personal work and observations of Professor Serra over a period of thirty years in Sardinia, one of the regions with most leprosy in Italy. The subject is dealt with in full.

Leprosy has been endemic in Sardinia since ancient times, and though less important today as regards morbidity than malaria, tuberculosis and trachoma, it is equally malicious. The existence of the disease and of leprosia in the island can be traced to the Middle Ages, and it seems to have been prevalent from the 11th to the 13th centuries. A seal unearthed at Dorgali, near Orosei, with the inscription "Sigillum Fratris Tibaldi Ordo Militare Santi Lazzari Jerosolymitani," indicates the existence of leprosia under the care of the Lazarists in the 12th century. Various documents prove its existence in later centuries.

Modern study of the matter began with Mantegazza (1902) and Ciuffo (1903), followed by Colombini and Serra (1909), Radeli (1909) and especially by Serra and his group. In 1858 a special leprosy ward was established at San Remo, but it was suppressed in 1917 and the patients were sent to Cagliari, where a leprosarium was established by Radeli. This beginning of an effort to control leprosy was furthered by censuses of the disease and, through the influence of the Società Italiana di Dermatologia e Sifilografia, the passage of the Leprosy Act of 1926. This act provides for the reception of all persons with manifestations of leprosy in a contagious form in special wards of the university clinics and hospitals at the expense of the State. However, no organized plan adequate to stamp out the disease has as yet been put into effect. Such a plan, according to Serra, should include the establishment of several regional leprosia, one each in Northern, Central and Southern Italy, and in Sicily and Sardinia.

The author proceeds to deal with his epidemiological, clinical and other observations. Between 1927 and 1931 there were 150 deaths among lepers, and in 1931 there remained 38 cases, 21 females and 17 males, of whom 14 were in Terralba, a village in the territory of Oristano. New cases are not numerous, only eight having been recorded six years. Among married lepers 75 percent of females and only 53 percent of males were fecund, which the author explains by the greater severity of the disease in the males at the time of their marriage; other factors are also considered, including the possible passing of the bacillus into the placenta,

¹This review is a summary of a detailed review prepared by Rivelloni.

the amniotic fluid and the fetus, on which observations are lacking but which he is inclined to believe has an influence. Study of the sperm of 40 patients revealed the bacillus in 19 instances, once in the spermatozoa, but transmission to the female on this account must be rare. With regard to the fact that children of lepers are apt to be weak and emaciated though without evidence of the disease, Serra considers the possibility of a leprous intoxication in embryonal life, and of the existence of a filterable form of the organism. Because of the small numbers of children born to lepers and the high mortality among them, such families tend to disappear, though there are leprous families in which the disease has decreased and disappeared in the descendants.

In the discussion of contagion cases are related of instances of the infection being acquired through sexual intercourse, the wearing of contaminated garments, and by contact in the family. The common domestic insects have been studied with regard to their rôle in transmitting the disease, and *Demodex* has been found to be of particular importance; there is no doubt about its carrying the infectum, but the circumstances that determine that and the penetration of the organism have not been established. The skin is held to be the usual portal of entry of the infection, though the mucus membranes are not to be excluded. The period of latency is usually long, and a case is cited in which the disease appeared seven years after the bacillus had been found in material from the inguinal gland. The most frequent early indication of infection, seen mostly in relatives and others living with lepers, is enlargement of the lymph glands. Later, as prodromata, come in order of frequency epistaxis, formication, torpor of the limbs and a feeling of dryness. In many cases the onset of the disease is connected with a psychic or physical trauma, as pregnancy and childbirth.

Special attention has been paid to the means by which the bacillus may gain an exit. It has been found in the nasal mucus, saliva and sputum and tears when there were lesions of the corresponding tissues, in the perspiration and sebaceous material, the scales and crusts of lepromata, in macules, lymph-gland juice, the circulating blood, the sperm even in the absence of active lesions of the testes; it is seldom found in the vaginal or uterine mucus, and is absent in the menstrual blood and the cerebro-spinal fluid.

Serra and his school have contributed notably to knowledge of leprosy through the study of biological tests. These include tuberculin tests, complement fixation with luetic and leprous antigens, the Wassermann reaction (with which only 10 percent of nodular cases were positive, 10 percent partially positive, and 41 percent showed anticomplementary effect); flocculation tests, which were found of doubtful significance; and numbers of other investigations, including agglutination reactions with the culture isolated by Serra himself.

Serra's work in connection with the bacteriology of leprosy is outstanding. He has shown that the bacillus is cultivable anaerobically in series and transmissible to laboratory animals (anterior chamber of the rabbit's eye), from where it can be transmitted in series or recovered in culture. The strain agglutinates with sera from lepers and causes specific deviation of complement with such sera and with those from experimental animals. Vaccine therapy with the culture has been successful in most of the cases treated.

The clinical manifestations of the disease are dealt with in detail, and also the changes in the various tissues, organs and fluids. With regard to morbidity, malaria stood first among the cases in Sardinia (70 percent), then erysipelas, broncho-

pneumonia and pleurisy, (22 percent); tuberculosis is fairly common (18 percent) and also gastro-enteritis (7 percent). Some cases of leprous broncho-pneumonia have occurred.

With regard to treatment, all of the many preparations advised for use have been tried, and some favorable results have been obtained with chaulmoogra, cyanocupric preparations, vaccine of Serra's culture, Valenti's antileprine, the Deycke nastine, Rost's leprolin, and with cyanocupric, bismuth, gold and tellurium preparations. Among associated methods of treatment diathermo-coagulation and radium therapy have been used successfully, the later having considerable effect. Anticipating the construction of a suitable leprosarium, Serra gathers all of the lepers in Sardinia twice a year into the settlement attached to his clinic for treatment, sending them back in much improved condition.

Bound with this book, which is of unusually large size, are two very large tables which summarize all the data of the cases that have been studied. Thus is available material of particular value for those who are not familiar with leprosy and who may encounter it in their practice, and for teachers who have to deal with the subject.