CURRENT LITERATURE

It is intended that the current literature of leprosy shall be dealt with fully 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.

SHAPIRO, D. [Speculations on Job's disease.] Hippocrate **7** (1939) 281.

Shapiro rejects the interpretation made by St. John Chrysostome, St. Thomas, and other fathers of the Church that it was leprosy, an opinion also held in the eighteenth century by Astruc. Equally unacceptable to him are the views that Job had syphilis, as suggested by Dom Calmet on account of the generalized eruption, osteocopic pains and constitutional disturbance, or that the disease was scurvy, as advanced by J. Rollet. Like many modern authors, such as Gesenius, Wiener, Rosenmüller, Le Hir, Delitzch, Knabchauer and Davison, Schapiro maintains that Job suffered from elephantiasis gravis, basing this diagnosis on the typical symptoms mentioned in the Book of Job—namely, swelling of all the tissues (xxx, 18) due to engorgement of the lymphatics, . black colour of the skin (xxx, 30) due to renal changes, ulcers all over the body (ii, 7; vii, 5), burning pains in the bowels (xxx, 27), and nocturnal pains in the bones (xxx, 17). Moreover, although it has been known from the earliest times that leprosy was a contagious disease for which isolation was enforced, Job's complaint was not regarded as contagious by his friends who stayed with him seven days and seven nights (ii, 13).—[Abstract from *British Med. Jour.* **I** (1940) 395.]

SPRAWSON, C. A. Leprosy in Soviet Russia. Lep. Rev. **10** (1939) 106-108.

The author spent a month on a medical tour in European Russia, his chief interests being leprosy and tuberculosis. He reports on the treatment of nerve conditions by injections of novocaine along the course of nerves used by Professor Speransky of the Institute of Medical Research and Experimental Medicine, Leningrad, who claims that by thus blocking the nerves lasting therapeutic results can be obtained in cases with trophic ulcers and contractures, and also with improvement of the general condition. Sprawson's chief impressions about leprosy in Soviet Russia were: (*a*) that it is not a major problem there; (*b*) that hitherto not much has been done for it, energies having been devoted to more important problems such as tuberculosis, which has been attacked with the utmost energy and with considerable success; (*c*) that, however, leprosy is now being tackled and more leprosaria are being built, though much more remains to be done.—[From abstract in *Lep. in India* **11** (1939) 105.]

SZÉKELY, E. Contribution à la prophylaxie et au traitement de la lèpre. Enquête en Roumanie. [Contribution to the prophylaxis and treat-

ment of leprosy. Inquiry in Rumania.] Thèse de la Faculté de Médecine de Lausanne, 1939.

There are about 4,000 lepers in Rumania, and there is a tendency to marked increase in certain regions, especially on the frontiers of Bessarabia. The members of a religious sect, who after the birth of a male child mutilate themselves to become eunuchs, contribute particularly to the victims of this disease. The other inhabitants are also affected, but in a lesser proportion. There is as yet no special legislation in Rumania requiring the segregation of lepers, but they are nevertheless isolated, in two leprosaria. The oldest of these is at Largeance, in Bessarabia, having been founded in 1916, at which time the disease began to extend widely in the southern part of that region. It is a sort of village with 250 patients who work in the fields, among them being included a number of leprous couples. The other leprosarium, Tichilesti, destroyed by bombardment during the last war, is located on the banks of the Danube, in a very favorable climate.—[From abstract in *Praxis Berne* (1940) Apl. 11.]

PARMAKSON, P. [Leprosy in the Kuuda leprosarium, 1896-1935.] Eesti Arst **16** (1937) 127-135 (in Estonian, with summary in French).

In the last forty years 455 lepers were treated in this leprosarium, 203 men (44.6%) and 252 women (55.4%). No reasons can be given for the predominance of women, which is general in Estonia. Classification: lepra tuberosa 38.5%, mixta 29.0%, and maculo-anesthetica 32.5%. An increase in the first of these forms has been observed. Middle age predominated, the average age at first symptoms being 37.1 years and at isolation 45.9 years. In 284 cases of death, the average duration of the disease amounted to 15 years, in nodular cases 17, in maculo-anesthetic cases 6 years. Causes of death: leprosy and complications in 49, of which 32% were due to cachexia, 3% to stenosis of the larynx, 7% to edema of the larynx, 6% to gangrene and 1% to leprous meningitis. Of other diseases: circulatory disturbances, 11%; marasmus senilis, 7%; diseases of the organs of respiration, 7%; of the kidneys, 6%; septicemia, 4%; pulmonary tuberculosis, 3%; cancer, 2%; and other afflictions, 11%. The low figure for tuberculosis is noteworthy. Through treatment 88 patients (19.3%) were healed and discharged, with disappearance of all symptoms. These were subsequently examined after 5 to 10 years and in 10 cases (11.4%) relapse was observed. Of these discharged cases 13 were nodular, 5 mixed, and 70 cases maculo-anesthetic. Of the 10 relapsing patients, 5 were nodular, 1 mixed and 4 maculo-anesthetic. The treatment consisted of chaulmoogra oil and its preparations, which in recent years has been combined with the CO_2–snow procedure. —[From abstract in *Zentralbl. f. Haut- u. Geschlechtskr.* **61** (1938) 39.]

STEINER, J. Ein neues Leprainstitut in Abessinien. [A new leprosy institution in Abyssinia.] Wien. med. Wchnschr. **88** (1938) 1323-1325.

A new leprosarium was established by the Order of Malta on January 15, 1938, in North Abyssinia in the region of Adua and Axum, on the high plain of Seclaca. It is in a healthy region of good climate with a good water supply and with land suitable for agriculture and cattle breeding, so that an agricultural settlement can be combined with the

institution. Administration quarters are separate from the hospital proper. Men and women are accommodated separately. A large stone barracks may serve as an isolation station in case of epidemic. Sufficient space for laboratories, libraries, etc., are said to be available for purposes of examination and investigation and for the instruction of physicians. For the agricultural colony, three villages are provided for 600 lepers capable of working, with their families. A fund has been provided for the establishment of an asylum for the children born in the colony. The institution will bear the name "Agostino Chigi." —KLINGMÜLLER

PESCE, H. Vencer la lepra. [Conquer leprosy.] Folleto de Propaganda Sanitaria, editado por la Campaña Antileprosa en Andahuaylas, Cusco, Peru, 1939, 12 pp.

This pamphlet, by the chief of the antileprosy campaign in the province of Andahuaylas, Peru, is a simple, popular one which, while evidencing a somewhat limited acquaintance with the literature, is of interest because of certain data that are included. Peru as a whole is little affected, though an asylum—the Casa de San Lázaro, said to have been the second one in the Americas—was established at Lima in 1573. The important foci are limited to the "Montaña," in which the number of cases is estimated to be not more than 3,000. With respect to the Sierra, there are mentioned (*a*) the focus in Andahuaylas, discovered in 1937 after a half century of unrecognized latency; (*b*) one in the province of Abancay, discovered in 1939; and (*c*) isolated cases found for many years in the Department of Apurímac. It is believed that the disease was introduced into Peru from the mountain regions of Colombia and Brazil, and into the Sierra—with reference to Andahuaylas—by a group of persons who, about 1883, visited the Rio Ucayali region, one member of whom became the first case known to have occurred in the province. The disease does not tend to diffuse in this region. With respect to Apurímac, only 25 cases dying of leprosy have been registered in more than 50 years, and only 25 exist there at present; the most afflicted villages have but 5 cases at most. [No figures are given for the two recently discovered foci.] Heretofore little attention has been paid to this disease in Peru, but though there is no evidence that it is diffusing the authorities have undertaken to eradicate it. The construction of a modern leprosarium has been begun in Iquitos, which will replace the deficient old San Pablo leprosarium. For the present activity in Andahuaylas an antileprosy "dispensary" has been established at Huamb, where the cases so far discovered are interned and treated. —H. W. W.

KUCZYNSKI-GODAR, M. H. AND PINEDO, V. M. El Asilo de San Pablo y el problema de la lepra en el Oriente Peruano. [The San Pablo Asylum and the leprosy problem in Eastern Peru.] Reforma Med. (Lima) **26** (1940) 511-526.

In their resumé the authors state that an analysis of the leprosy problem in Eastern Peru compels them to admit the insufficiency of the measures actually used to combat the disease. The outstanding defects of the San Pablo "asylum" are discussed, and the primitive conditions there are illustrated by photographs. (Another photograph, entitled "The abandoned lepers of the Ucayali," accompanies an editorial introduction

to this article.) The authors hold that a well-arranged agricultural colony is preferable to a hospital; a "sanitary town of lepers" would offer a desirable mode of life for the majority of the inmates, and would permit gradual and economical expansion as needed. In a certain district, examined for the first time and not intensively, 1.5% of the population was found to be leprous. The peculiar conditions observed in Eastern Peru which account for this situation are discussed, and measures necessary for an efficient antileprosy campaign, for which it is necessary to arouse a favorable public opinion, are considered. The problem comprises that of proper housing, feeding and treatment—in connection with which special mention is made of the diet treatment which Gerson introduced for advanced forms of skin tuberculosis. —H. W. W.

YUSA, Y. Social aspect of leper-problem. Trans. 12th Meet., Japanese Lep. Assoc., 1938; Special Address. La Lepro **10** (1939) suppl. 29-30 (abstract).

The author, of the Mitsui Foundation, in Tokyo, first notes the lack of correlation of the natural sciences with the social structure. Specifically regarding medical science, concern is being felt about the deterioration of the national health and the increasingly large number of villages in which there are no physicians, they tending to concentrate in the urban centers. The three main scourges are tuberculosis, venereal diseases and leprosy. Lepers are found widely distributed in the rural regions. The care of these people was stimulated by the Empress Komyo, before the time of St. Francis in Italy, but this feeling cooled during the feudal period. Later, missions undertook to care for them, and then the government took up the work on a large scale. The lines along which they should be developed are indicated. —H. W. W.

OGASAWARA, N. Statistische Beobachtungen über die Lepra aus unserer Poliklinik. Ueber die Lebensweise der Leprösen. [Statistical observations on leprosy in the polyclinic. The manner of life of lepers.] Trans. 12th Meet. Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 32 (abstract).

In order to ascertain the mode of life and the kind of subsistence of lepers, the author has for several years investigated in parallel, in a large number of sick and healthy people, the following factors: property, residence, nourishment during the nursing period, weakening conditions during childhood, gastro-intestinal disturbances after weaning, disturbances in development, delay in the development of speech and the first attempts to walk, bad disposition, time of eruption of the milk teeth, and nocturnal enuresis. Most of the persons with leprosy were [the only observation here recorded] born on the land but reside in the cities.—[From abstract.]

MONTESTRUC, E. Considérations sur l'immigration des lépreux en France. [On the immigration of lepers into France.] Bull. Soc. Path. exot. **33** (1940) 73-76.

The author deplores the considerable immigration into France of lepers originating from Martinique. He believes that it is desirable to make such people understand that climate has nothing to do with the evolution of the disease, and that they will be as well treated in their own country,

by physicians who have experience with leprosy and who are in touch with what is being done in all countries for the treatment of that affection. A large number of these lepers leave their own countries hoping that they may more easily pass unrecognized in the metropolis.—[From abstract in *Presse Med.* (1940) May 11.]

OBERDOERFFER, M. J. Regional variation of clinical types in leprosy, seasonal variation of bacteriological findings in tuberculoid leprosy, and their possible causation by sapotoxins in certain foodplants. Compt. rend. Far Eastern Assoc. Trop. Med., 10th Congress, Hanoi, 1938; Hanoi, 1940, pp. 141-152.

This article is a comprehensive statement of the author's "theories and working hypothesis" that have been presented repeatedly in the periodical literature. [See the editorial note in this issue.] —H. W. W.

OBERDOERFFER, M. AND GEHR, E. Die Zusammenhänge zwischen sapotoxinhaltigen Nahrungspflanzen und der Lepra. [The relations between food plants containing sapotoxin and leprosy.] Ztschr. f. Hyg. **122** (1940) 472-502.

The view of Oberdoerffer that the infection by the microorganism of leprosy occurs only in a chemically prepared ground is discussed in summary and supplemented. The establishment of the infection is due to an insufficiency of the suprarenals, and to the taking of sapotoxins with the food. Extensive epidemiologic observations on the distribution of leprosy in the world are employed to support this assumption. On this basis they explain many hitherto unexplained characteristics of the disease; for example, the annual fluctuation in the finding of bacilli in the bacillus-poor form of leprosy; the peculiarities of the infection with respect to children; differences referable to sex and in individual families; the exemption of certain places from the disease and in contrast the rapid invasion of others (e.g., Nauru), and the relatively severe course in certain groups of the population. Astonishing correlations are reported. Sapotoxins occur in various food plants, but especially in the taro-root (*Colocasia antiquorum*) and the corn-cockle (*Agrostemma githago*). Taro comes into consideration mainly for the tropics, the corn-cockle as an impurity of bread-corn in other zones, it still being prevalent in agriculturally backward regions. From the geographical distribution of these food plants, it is made probable that the history of the spread of leprosy parallels the history of the distribution of the sapotoxin-containing plants. —KLINGMÜLLER

GEHR, E. Die Lepra im Kreise Memel. [Leprosy in the Memel District.] Deutsch. med. Wchnschr. **66** (1940) 715-720.

At the beginning of this century the leprosy endemic in the district of Memel, of West Prussia, showed a considerable decrease and, since the last new case was discovered in 1924, it can be considered extinct. From the rapidity of its extinction it is evident that racial factors or climatic conditions could not have influenced the change. More than two-thirds of the inmates in the leprosarium belong to the country population. About the end of the 19th century the bread-corn in the rest of Germany had about 1% of corn-cockle (*Agrostemma githago*), while in West Prussia it was up to 10%. With that degree of impurity, about 1.5 gm. of sapotox-

in was taken daily with the bread, if the sapotoxin content of corn-cockle is taken at 6%. It was only in 1910 that these conditions improved in the country and the bread corn came to contain very little cockle. The high corn-cockle content in Memel at the time of the leprosy epidemic there, corresponded to the conditions general in Germany before the disappearance of leprosy in the Middle Ages. The extinction of the Memel epidemic occurred simultaneously with the purification of the bread corn. The epidemic had attacked only places which were located very unfavorably agriculturally, affecting mainly the country population among whom the cockle-containing corn played a rôle in the nutriment. Women were more strongly affected than men, perhaps because the men in their outdoor work had better conditions of nourishment. Isolation of cases, naturally, had accelerated the extinction of the epidemic.

—KLINGMÜLLER

READ, B. E. The cause and transmission of leprosy. Lep. Quart. **14** (1940) 117-123.

The author indicates disagreement with the conclusions of Hopkins and of Aycock that heredity plays a part in the etiology to leprosy, in the way of an inherited susceptibility in some people. The idea cannot be dismissed, because there is apparently a hereditary factor in allergy, but more positive evidence is required. The low contagiosity of the disease seems, he thinks, to have led to a return to the question of heredity, but other factors have not received enough consideration; he considers more likely that the essential factor is an acquired constitutional weakness of defense. He seems satisfied that improved living conditions, hygienic and dietetic, suffice to explain the dying out of leprosy in England. The acquisition of constitutional weakness through malnutrition is discussed at length. The opinion is expressed that the idea that the eating of taro [*Colocasia*] is the factor responsible for infection cannot be considered seriously, as many lepers never eat that vegetable. Considerable stress is laid on vitamin deficiencies in diet, and recommendations for the correction of that condition are offered. — H. W. W.

RADNA, R. Contribution au problème de la transmission de la lèpre. Les formes de la lèpre dans la région de Pawa et leur infectiosité. Première note: L'élimination du bacilli de la lèpre. [Contribution to the problem of the transmission of leprosy. The forms of leprosy in the region of Pawa and their infectiousness. I. Elimination of the leprosy bacillus.] Ann. Soc. belge Méd. trop. **19** (1939) 39-50.

——— Idem. Deuxième note: La transmission du bacille de Hansen. [II. Transmission of the Hansen bacillus.] Ibid. **19** (1939) 201-224.

(1) From observations made in the Pawa region of the Belgian Congo, the author finds that the ordinary scales and most of the surface of the skin very rarely contain bacilli, but that the skin of the external genital organs, male or female, and that of the breast, often do so. Besides the nasal mucosa, bacilli are present in the conjunctiva and the tears, in cases with conjunctival or lachrymal lesions, and in the cerumen. The sperm may contain many of them. Lesions of the respiratory tract, particularly of the larynx, emit contagious droplets. Cases of the "diffuse"

form of lepromatous leprosy are very dangerous. The role of placental transmission is to be studied.

(2) The author has concluded that any form of the disease may arise from infection by any form, and that there is no reason to attribute the different types to different bacilli. Cases of neural leprosy may be contagious. Hereditary [*sic*] transmission is possible but difficult to prove; transmission by infectious contact seems to be the usual occurrence. The author has investigated experimentally the question of transmission by arthropods. Many may harbor bacilli (obtained from patients or leprous tissue), but they become freed of them quickly. Mosquitoes collected in leprous environments often contain them, flies sometimes, the moth midges (Psychodides) exceptionally. Lutz' hypothesis of transmission by the diptera therefore involves great exaggeration. Acid-fast bacilli have been found in fleas and chiggers (sarcopsyllines) taken from lepers, but not on the eggs of the latter. These insects, on the other hand, cause lesions of the skin which favor the penetration of the bacilli. Transmission by lice is very doubtful. *Sarcoptes scabei* and *Demodex folliculorum,* frequent in the skin of lepers, can transmit the bacilli and they facilitate their penetration by the lesions which they provoke. Cockroaches often harbor bacilli for long periods and transport them, but it is a question if they are virulent; an experiment has shown that that may be so, in the case of Stefansky bacillus.—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 62.]

MIYAZAKI, M. On the development of symptoms of leprosy. Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 34 (abstract).

The author recognizes three stages of development of the disease: (1) a latent one; (2) that of primary symptoms—referring only to sensory disturbances—with: (*a*) a short period of hypersensitivity, followed by (*b*) the one of deterioration; and (3) that of secondary symptoms, again divided: (*a*) one of indefinite symptoms, transitional, and (*b*) the one of definite symptoms, when for the first time the manifestations are clear. Abortive cases, in which the development of the symptoms stops in the primary or indefinite stage and does not advance, are unexpectedly numerous. —[From abstract.]

MIYAZAKI, M. On the provocation of the onset or aggravation of leprosy. Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 35 (abstract).

This abstract consists merely of a long summary list of the various factors that are held to provoke the onset or aggravation of leprosy—physiological changes, overstrain, acute and chronic diseases (including avitaminoses), mechanical injury, thermal irritation, pharmacological irritation —with no evidence of a critical evaluation of them. —H. W. W.

OGASAWARA, N. Klinische Studien zur Lepra maculosa. Die Temperatur in den leprösen Flecken. [Clinical studies of macular leprosy; the temperature of the leprous macules.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 36 (abstract).

By means of Eiko's electrical apparatus the temperature of the macules was determined in 29 cases. The touch, pain and pressure sensibil-

ities were also investigated at the same time. In nonelevated lesions the temperature was more or less reduced. In other, elevated lesions, or in depigmented spots, it was in general variable.—[From abstract.]

MUIR, E. Resistance and the typing of leprosy skin lesions. Lep. Rev. **10** (1939) 221-225.

The object of this note is to aid in the recognition of the various types of lesions and their significance. The resistance or immunity of the patient is considered to be the chief factor responsible for the nature of the lesion. Immunity to leprosy has been divided into three main groups: natural, general and acquired. While the degree of natural immunity may be the main determining factor of the type of the disease, it is considered that the general resistance has an important bearing on its extent and progress. The main clinical and bacteriological distinctions between the skin lesions of the neural and the lepromatous cases are tabulated. The neural form may frequently change into the more severe lepromatous type. Relics of old tuberculoid lesions may be found in cases which have become distinctly lepromatous, or reference to previous records may show that this change has taken place.—[From abstract in *Lep. in India* **12** (1940) 30.]

PESCE, H. Un símbolo individual combinado y un índice colectivo para expresar la evolución de la lepra. [A combined individual symbolization and a collective index for the expression of the evolution of leprosy.] Bol. Of. Sanit. Panamericana **19** (1940) 562-568.

Based on the classification of cases adopted by the Cairo conference, with special reference to the subclassification by degree of advancement, the author considers the possibility of utilizing statistically a grouping of these symbols to obtain a "collective index." To this end the 15 subgroups and combinations (no attention being given the subdivisions Na, Ns and Nt) are combined into six groups, each indicated by a numeral, a "common symbol of evolution." For example, the L1 and N1 cases together are represented by 1, the L2, N2 and L1-N1 cases by 2, the L3, N3, L1-N2, and L2-N1 cases by 3, etc. The mathematical and practical fundaments and other considerations are discussed, and the ends arrived at are shown in tables; the matter cannot be presented in summary. The proposal, it is said, is not intended to arrive at a moré adequate clinical differentiation, but would find its usefulness in sanitary statistics; it is claimed that, among other things, it would permit an approximate and ready comparison of the evolutive phenomena of the disease in masses, and in particular would be useful in studying the factors of a collective nature the effects of which it is not possible to investigate by means of individual comparisons. [To the reviewer the value of any statistical manipulation which groups, for example, N1 and L1 cases together as epidemiologically equivalent seem highly questionable.] —H. W. W.

NISI, T. Ueber zwei Fälle von Erythema nodosum leprosum. [Two cases of erythema nodosum leprosum.] Hihu-to-Hitunyo **5** (1937) 183-186 (German summary).

Two cases in which an erythema appeared during treatment. (1) A 25-year old man, with macular leprosy for four years, treated with differ-

ent remedies, among them gold and prontosil preparations. Suddenly several nodules appeared on the extremities, most of them pea- to bean-sized, indurated and sensitive to pressure. A histologic section shows infiltrations containing lepra cells, found especially around a vein. (2) A 39-year old house-wife, with nodular leprosy for 15 years. Now the patient suffered an exacerbation with fever, joint pains and reddish nodules on the extremities and face. Histologic findings as in the first case. The author concludes that the leprosy bacilli cause erythema nodosum leprosum, they being transported through the veins and producing an acute inflammation.—[From abstract in *Zentralbl. f. Haut- u. Geschlechtskr.* **58** (1938) 304.]

UCHIDA, M. Beziehungen zwischen Iridocyclitis acuta und Erythema nodosum leprosum. [Relation between acute iridocyclitis and erythema nodosum leprosum.] Japanese Jour. Dermat. & Urol. **46** (1939) 67 (abstract).

Acute iridocyclitis has been found to occur in 74% of cases with erythema nodosum leprosum. In most instances the erythema nodosum appears first, and then the iridocyclitis.—[From abstract.]

YASUDA, T. Eine besondere Art von Keratitis parenchymatosa leprosa. [A special kind of keratitis parenchymatosa leprosa.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 41 (abstract).

The patient was a woman 29 years of age who had had leprosy for 12 years. For 4 years there had been lesions of the eyes, which 10 months previously had become blind. There was slight lagophthalmos, the eyelids were swollen, edematous and ptotic, and chronic conjunctivitis, leprous pannus and a slight, superficial keratitis were present, the last being a keratitis parenchymatosa punctata or keratitis interstitialis punctata.—[From abstract.]

UCHIDA, M. Sehnervenatrophie bei Leprösen. [Atrophy of the optic nerve in leprosy.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 40 (abstract).

Atrophic optic nerves from 8 autopsies have been studied histologically, an investigation that heretofore has seldom been made in leprosy. Macroscopically, atrophy and shortening were evident, the measure being 3-5 mm. whereas in eyes with normal vision it is usually 5-6 mm. [Nothing is said of the histological findings.]—[From abstract.]

LOCARD, E. Les empreintes digitales et la lèpre. [Finger prints in leprosy.] Rev. internat. criminol. **9** (1937) 492-496.

Changes of the finger patterns due to leprosy, said by Ribeiro to be of significance in diagnosis, are so rare that they cannot reduce the value of dactyloscopy. It is said that whitlow also can change the prints, but that too is of rare occurrence. Both diseases, therefore, are to be considered, together with accidental injuries and intentional mutilations, as possibly affecting the finger print. From investigations conducted by the author for years, such changes are of no real importance, forensically or criminally. It is also pointed that a more accurate study of the alterations in the arrangement and form of the papillary borders is of some

concern in psychiatry.—[From abstract in *Zentralbl. f. Haut- u. Geschlechtskr.* **59** (1938) 605.]

VESPOLI, M. As ulceras leprosas, pathogenia e tratamento pelas infiltrações intradermicas; modo de ação geral e local dos preparados chaulmoogricos. [Leprous ulcers; pathogenesis and treatment by intradermal infiltration; general and local action of the chaulmoogra preparations.] Rev. Brasileira Leprol. **7** (1939) 295-307.

The author describes the treatment of ulcers by infiltration, for which purpose he injects chaulmoogra oil into the subcutaneous tissue around the edge of the ulcer. Good results are obtained, as is shown by a series of photographs taken before and after treatment.—[From abstract in *Lep. Rev.* **11** (1940) 149.]

MUIR, E. Fungus infections in leprosy. Lep. Rev. **10** (1939) 206-208.

The writer states that epidermophyton infection forms one of the most troublesome complications of leprosy in the tropics. It is found particularly in patients with widespread skin lesions of the neural type. In view of the recent work of Peck and others, who found that the sweat possessed fungistatic and fungicidal properties, he considers it likely that the proneness of many neural-type cases of leprosy in the tropics to epidermophytic disease may be due to the absence of sweat.—[From abstract in *Lep. in India* **12** (1940) 29.]

VON SWERBEJEW, N. TH. Psychische Veränderungen bei Lepra. [Psychic changes in leprosy.] Arch. f. Psychiat. **108** (1938) 572-593.

The author investigated the influence of leprosy on the mind among the 11 patients present in the Memel leprosarium during his stay there, in 1931-32. Six of the cases were from that region; 3 others came from Lithuania, 1 from Esthonia, and 1 from Bavaria (infection in Brazil). The investigations were difficult because the patients were mentally of a very low standard, with little schooling, and for the most part they could be questioned only with the help of an interpreter. Outspoken psychoses like schizophrenia, manic-depressive conditions, exogenous-symptomatic psychical changes, amentia-like pictures or Korsakow's syndrome could not be detected. But a disease of such general effect as leprosy, with its lethargy and hopelessness, the gradual mutilation and the isolation in an institution—in an otherwise foreign world—must necessarily affect the mind of the patient. The essential points of the histories of the 11 cases are discussed individually. Without consideration of the degree of intelligence, one can distinguish on the whole two kinds of reactions: (*a*) on the one hand an inclination to peaceable, orderly behavior, partly insensible (apathetic), partly innerly reacting; (*b*) on the other hand irritation, distrustfulness, with a tendency to soreness. There is no specific action of leprosy; the psychic changes that burden the patient consist of a reactive character change, mostly in the sense of a turning toward asocial characteristics.

—KLINGMÜLLER

MUIR, E. Some mental aspects of leprosy. Lep. Rev. **10** (1939) 114-118.

This is a brief discussion of the abhorrence shown by the community towards lepers, which is responsible for the depressed mental condition of the patients. This is due to the disfigurements caused by the disease, as

leprosy is not nearly as infectious as tuberculosis. Suitable employment helps to restore self-respect. In the Louisiana leprosarium the author found 18% of the patients suffering from mental depression and 3% from definite psychoses. Sympathetic treatment is of the greatest importance.—[Abstract from *Trop. Dis. Bull.* **37** (1940) 41-42.]

SAKURAI, H. AND HIRAMATSU, N. Histaminprobe bei Lepra und anderen Hautkrankheiten. [Histamin test in leprosy and other skin diseases.] Japanese Jour. Dermat. & Urol. **46** (1939) 126 (abstract).

This reaction, made on 100 leprosy patients [mention not made of case types], was negative in 87 cases, weakly positive (±) in 10, and positive in 3. It was also made on cases of other skin diseases, as follows: 4 of chronic eczema, 3 of psoriasis vulgaris, 2 of scleroderma, and 1 each of granuloma annulare, atrophia cutis, alopecia areata, urticaria, salvarsan exanthema, trichophytis, and erysipelas. With the exception of a case of scleroderma, in which the result was negative, and a case of erysipelas, with unknown result, all other cases reacted positively. The test was negative in 7 cases of beriberi, in 3 of myelitis, and in 1 of supposed tabes dorsalis.—[From abstract.]

DELANOE, E. Réflexions au sujet de la lèpre. [Reflections concerning leprosy.] Bull. Soc. Path. exot. **32** (1939) 323-328.

This paper advocates treating cases of leprosy in hospital with changes in the drug used every two days so as to prevent the bacilli becoming accustomed to any one preparation. Among those advocated are arsenobenzol, chaulmoogra oil, Solganum B, irradiated tri-calcine, gynocardate of soda, salts of calcium, and phosphates, hyrganol, vaccine BCG, oil of camphor, quinine, methylene blue, koumyl, etc. The author claims very much better results by this plan of polypharmacy.—[Abstract from *Trop. Dis. Bull.* **37** (1940) 44.]

BASOMBRIO, G. Estado actual del tratamiento de la lepra. [Present status of the treatment of leprosy.] Rev. Argentina Dermatosif. **23** (1939) 151-158.

Reviewing the present status of the treatment of leprosy, the author affirms that the progress accomplished is not great, but that it is permanent. Chaulmoogra has not lost its prestige, but a really efficacious oil has to be selected and the useful derivatives prepared therefrom. For correct interpretation of results it is necessary to select the cases uniformly and to make proper examinations and records.—[From abstract in *Bol. Of. Sanit. Panamericana* **18** (1939) 984.]

LABERNADIE, V. Le traitement de la lèpre par les huiles chaulmoogriques (et leurs dérivés), particulièrement par ces huiles neutralisées, administrées par voie intraveineuse. [The treatment of leprosy by the chaulmoogra oils and their derivatives, particularly by the neutralized oils administered by the intravenous route.] Compt. rend. Far Eastern Assoc. Trop. Med., 10th Congress, Hanoi, 1938; Hanoi, 1940, Vol. II, pp. 153-169.

This is a comprehensive review of this subject, with which the author has dealt repeatedly in previous publications, and contains many references

to experience of other workers and an unusually extensive bibliography (97 references). It lacks a summary, probably because it does not readily lend itself to summarization. —H. W. W.

LABERNADIE, V. Essais de traitement de la lèpre par l'huile neutralisée de Krabao (*Hydnocarpus anthelminthica*). [Attempts at treatment with neutralized Krabao oil.] Rev. Méd. française d'Extrême-Orient (1939) 823-826.

The author has tried the Indo-China krabao oil (*Hydnocarpus anthelmintica*) in 1 to 3 cc. doses intravenously. The cases treated are too few to permit judgment, but the author's impression was that the oil was less efficacious than that of *H. wightiana*.—[From abstract in *Trop. Dis. Bull.* **37** (1940) 634.]

DE MELLO, F. AND DE LOYOLA PEREIRA, O. Résultats de 5 ans de traitement dans la léproserie de Macazana (Inde Portugaise). [Results of five years of treatment in the Macazana leprosarium, Portuguese India.] Presse Med. **47** (1939) 897-898.

The authors discuss first general treatment, then specific treatment by means of Vaudremer's vaccine, alepol, methylene blue, the Reenstierna serum, the "plancha" or intradermal method, and intravenous injections of pure neutralized chaulmoogra oil. In conclusion they point out that as yet no medicament has been found that will give indisputable results in all forms of leprosy, but that among those which they have used chaulmoogra has had the most lasting effects, though at times quite slowly. The best method of administering it is not always by intravenous injections; when nodules are hard and voluminous, and in certain regions of the body, they have employed to advantage intradermal injections of the iodized oil. Edematous infiltrations of the hands and feet are rapidly ameliorated after injections of the Vaudremer vaccine. —H. W. W.

RADNA, R. Contribution au traitement de la lèpre: Le traitement par injections endoveineuses et endodermiques de fortes doses d'huile de chaulmoogra et de ses dérivés. [Contribution to the treatment of leprosy; treatment by intravenous and intradermal injections of large doses of chaulmoogra oil and its derivatives.] Ann. Soc. belge Méd. trop. **19** (1939) 393-406.

The cases being followed closely, it was found that treatment by the intravenous route was more efficacious and even better supported than by either the intramuscular or intradermal routes; 7,000 injections have been given in that manner without any trouble whatever. Of 14 cases treated, remarkable results were obtained in 12. The medicaments used have been graumanyl, progressively from 1 to 7 cc., one or two times per week, and Peirier's mixture of chaulmoogra oil and 3% sodium gynocardate [*sic*], progressively from 1 to 4 or 5 cc., one or two times per week. The medicaments were brought to 37°C before injection. With the intradermal method, 10-15 injections, 0.2-0.3 cc. each, were given in areas of 100-150 sq. cm.—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 76.]

YOSHINAGA, T. Studies on the absorption of hydnocarpus oil and its derivatives through the skin. La Lepro **10** (1939) suppl. 117 (abstract).

Hydnocarpus oil, hydnocarpic acid and ethyl hydnocarpate mixed with potassium iodide or salicylic acid were used in this work, their absorption being measured by the amount of the iodide or the acid in the urine. Olive oil with the same additives was used for control. The amount of iodide found was greatest with ethyl hydnocarpate and least with olive oil; with hydnocarpic acid and the oil the amount of absorption lay between those two. With salicylic acid, the ethyl hydnocarpate mixture gave the highest findings; the others gave less. The influence of giving hydnocarpus oil or ethyl hydnocarpate through the skin on the quantity of Ca, N and S in the urine was also investigated; Ca was slightly increased, N and S unchanged. With olive oil there was no change in the amount of any of these elements.—[From author's abstract.]

TOLENTINO, J. G. Infiltration method of treating the nasal mucosa. Month. Bull., Bur. Health (Manila) **20** (1940) 3-8.

Because nasal lesions, if not effectively treated, tend to persist, thus delaying the parole of patients already negative in the skin, there is need for an effective method of treating them. Three groups of ten patients each, all bacteriologically positive (3+ and 4+), were treated; (*a*) by swabbing with 20% chromic acid; (*b*) by electrocautery; (*c*) by infiltrating the mucosa with iodized *H. wightiana* ethyl esters. After five weekly treatments, 4 cases of the first group, 3 of the second group, and 7 of the third group had become bacteriologically negative. As the number of cases reported is small and the period of observation short, the results are inconclusive but they warrant further trials. Besides being apparently very effective, the infiltration method has the added advantage of being simple and easy, practicable for mass treatment, and not objectionable to the patients.—[From the author's abstract.]

ABE, H. AND ASANO, S. Ueber die Behandlung von Erythema nodosum leprosum mit Neostibarsan. [Treatment of erythema nodosum leprosum with Neostibarsan.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 38 (abstract).

Neostibarsan [described] was used experimentally in the treatment of 30 cases of this condition [lepra reaction] for the control of fever. In the 11 cases in which that manifestation was high, and in 8 of the 19 in which it was of moderate grades, it subsided. Of the other cases, 7 showed a tendency to subsidence of the fever, whereas it persisted in the other 4. The drug was also employed in another 6 cases complicated with pulmonary tuberculosis. In them the lung condition was aggravated to such in extent that the patients died within two to six months. From these observations it is concluded that the drug is useful in reaction cases, in order to reduce or overcome persistent or high fever, but that it is emphatically contraindicated in the presence of tuberculosis.—[From abstract.]

WADA, T. Ueber die Behandlungsresultate von Vitamin B_1 bei Lepra. [Results of treatment of leprosy with vitamin B_1.] La Lepro **10** (1939) suppl. 101 (abstract)

No benefit from treatment with this vitamin was evident, whether it was given by subcutaneous injection or into the spinal fluid.—[From author's abstract.]

SATANI, Y., TANIMURA, T. AND SAKURAI, H. Klinische Studien über den Einfluss von Vitaminpraparaten auf die Lepra. [Clinical study of the influence of vitamin preparations on leprosy.] La Lepro **10** (1939) suppl. 103 (abstract).

Ten cases were treated with a vitamin B complex (Vitarmon No. 3), and two with a vitamin C preparation (1-Askorbinsaure Loche). The former appeared to be more or less definitely effective in tuberculoid macular leprosy cases, and moderately so in the nodular form; in the infiltrative form, on the other hand, it was without effect. The vitamin C preparation was very efficacious in one nodular case, but gave no results in one of the infiltrative form. Whether or not the action of vitamins in leprosy is only a passing one is as yet undecided.—[From authors' abstract.]

AOYAMA, N. Wirkung von Kurzwellen-Strom auf lepröse Neuralgien. [Action of the short-wave current on leprous neuralgia.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 38 (abstract).

Radiothermy was used in the treatment of 63 cases (39 nodular and 24 neural) with leprous neuralgia which in spite of all other methods has remained very distressing. In 54 cases the condition was improved, in 6 it remained unchanged, while in 3, of nodular leprosy, it became worse.—[From abstract.]

ASANO, S. Serumtherapie bei Iridocyclitis leprosa acuta. [Serotherapy of acute leprous iridocyclitis.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 42 (abstract).

In 197 cases with this condition serotherapy with autoserum, heteroserum and serum from healthy persons was employed. The serum was given subcutaneously, once a week, in amounts that varied widely in different cases, from 0.1 or 0.2 cc. to 5, 7 and 10 cc. For the most part good results were obtained; only in 4 cases were there none. No important side-effects were observed; only with the largest amounts there was reddening and induration of the injection sites. The smaller amounts mentioned were for the most part without effect, and the cases so treated not infrequently recurred. The largest doses were not more effective than the medial ones (2 to 5 cc.). After about ten injections pain occurred in 93%, and congestion in 86% of the cases.—[From abstract.]

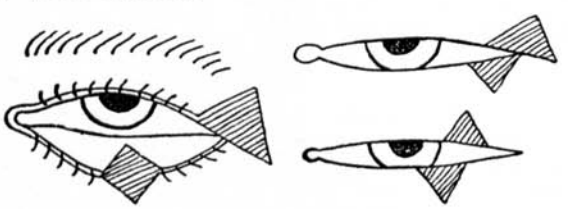
FUJITA, K. Sterilisierungsoperation en Leprösen Mannern. [The sterilization operation in leprous men.] La Lepro **10** (1939) suppl. 113 (abstract).

The results and influence of sterilization (removal of 1-2 cm. of the vasa deferentia) have been investigated in the 140 patients still available, out of the 385 who had been so operated upon in the Zensei leprosarium between 1915 and 1939. The measure was effective in preventing conception. In the last 30 cases the operative technique was modified by ligating the distal end of the tube-stump only on one side, the other end being left untied. No differences between the two sides were noticed, so it would appear that ligation of the proximal end is unnecessary. In 8 instances there occurred subcutaneous hematoma of the scrotum. Another complication was pain in the lumbar region, occurring in one-third of the

cases, but it was not certain that it was an effect of the operation. Sterilization does not influence the disease itself. In 41% of the cases the operation was followed by priapism, complained of even several weeks and months afterward. Sexual desire decreased in most of the cases.—[From author's abstract.]

YASUDA, T. Zur operativen Behandlung des Lagophthalmus bei Leprösen. [Operative treatment of lagophthalmos in lepers.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 41 (abstract).

The author employs a new method of operation, which consists of a combination of that of Adam and another technique. For the details an accompanying cut is referred to [see below]. Out of 25 cases so treated, 15 enjoyed good results; three months later there had been no return of the condition.—[From abstract.]



COUSIN, GRENIERBOLEY AND NGUYÊN-VAN-MINH. Sur la fréquence de l'hyperpolypeptidémie des sérums de lépreux et sur les difficultés de son interprétation. [Hyperpolypeptidemia of the sera of lepers and the difficulties of its interpretation.] Ann. École super. Méd. et Pharm. Indochine **3** (1939) 157-158.

Using the technique of Goiffon and Spaey, the authors have examined 81 sera of lepers, 24 of them repeatedly, and have found a habitual hyperpolypeptidemia, an observation not heretofore recorded. The findings are given as follows: below normal (-20 mgm.) 7 times; normal (20-30 mgm.) 21 times; and above normal (+30 mgm., sometimes considerably more, as high as 165 mgm.) 53 times. However, since the total number of cases is apparently only 55 (17 lepromatous and 38 neural), it is not evident what proportion of them gave abnormally high findings or whether there was any difference associated with type. Four of the cases with low findings had been treated with hydnocarpus oil (intravenous, Labernadie technique), and it is stated that previously they had given findings of 29-67 mgm. It is held to be significant that the group with abnormally high findings comprised all of those in which the disease was progressive, including 5 in lepra reaction. Duval and Roux have interpreted the polypeptid content of the serum as an indication of the process of cell destruction, but conflicting findings in different cases prohibit arriving at any conclusions with regard to the present investigation.—H. W. W.

BÜNGELER, W. AND FERNANDEZ, J. M. Untersuchungen über den klinischen Verlauf und die histologischen Veränderungen allergischer Reaktionen bei der Lepra. II. Klinische und histologische Untersuchungen über die spontane Reaktion der tuberkuloiden Lepra. [Investigations on the clinical course and the histologic changes of allergic reactions

in leprosy. II. Clinical and histological investigations of spontaneous reactions of tuberculoid leprosy.] Virch. Arch. **305** (1939) 473-493.

Investigations of spontaneous reaction in tuberculoid leprosy show that in certain cases fresh tuberculoid lesions appear in acute attacks, or older lesions become active. In this active condition bacilli are found almost regularly within the infiltrated areas and in the new centers; in 3 to 12 months the lesions return to their ordinary condition. Contrary to tuberculosis, in which productive and exudative phases may alternate, this does not occur in leprosy, or if so very seldom. Leprosy is either lepromatous or tuberculoid. In Brazil the latter type occurs more frequently in the black race, the lepromatous more frequently in the whites, and Germans and Italians infected as adults in Brazil almost always present that form. In a study of over 200 specimens excised during all stages of reaction in tuberculoid leprosy, the features characteristic of that condition were established. They are manifested as marked edema of the skin and intense hyperemia; round-cell infiltrations inside which there appears typical degeneration of the connective tissue, localized and nodular, as a peculiar mucous edema and as a fibrinoid degeneration and fibrinoid necrosis. Finally these centers are transformed into epithelioid-cell nodules as the end stage, and the bacilli are no longer to be found in them. As for the cause of the reaction, hematogenous dispersion of the bacilli comes into question. In sections of internal organs no tuberculoid changes of any kind could be found. The organism is in a high state of immunity, so that the bacilli soon perish. —KLINGMÜLLER

ABE, H. Nachtrag zum Blutbild des Erythema nodosum leprosum, insbesondere bei chronischen Fallen mit intermittierendem Fieber. [The blood picture in erythema nodosum leprosum, particularly in chronic cases with intermittent fever.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 37 (abstract).

The blood picture in chronic lepra reaction in nodular leprosy has been studied in 10 cases, with special attention to the differences between the condition in the morning, when the fever is in recession, and the afternoon, when it is present. With regard to the erythrocytes in such cases, there was slight anemia with a tendency to hypochromia. As for the leucocytes, in the fever-free periods 4 cases showed a slight leucocytosis, and all 10 had a relative increase of neutrophiles with lymphopenia, though the absolute number of the latter type was practically normal. The nuclei of the neutrophiles showed more or less of a shift to the left. In the febrile period there was in general an increase in the numbers of leucocytes; the contrary was exceptional. With the increase the difference between the neutrophiles and lymphocytes became less. In cases of pulmonary tuberculosis with similar fever curves the condition is the reverse, leucocytes being more numerous in the morning, when fever is absent, than later. Through the correlation of the leucocyte pictures it is thus possible to make a differential diagnosis between chronic lepra reaction and pulmonary tuberculosis with intermittent fever.—[From abstract.]

KADRNKA, S. AND MERDJO, A. Ã propos des manifestations osseuses de la lèpre. [Concerning the bone changes in leprosy.] Radiol. Rundschau **7** (1938) 269-286.

The alterations of the bones in leprosy are extraordinarily polymorphous. A case is described, a man 32 years old from the western part of Bosnia, leprous for at least 11 years, of advanced lepromatous form. Radiological findings: deep changes in the bones of the arms, upper jaw and in the lungs. The changes in the bones of the hands are especially peculiar with regard to their extension and their polymorphism. There are: diffuse rarefaction; regional epimetaphysary rarefaction; resorption and destruction of the diaphysis, distally and on the medullary side; resorption and destruction of the epimetaphysary part in the form of small circumscribed centers resembling cysts; destruction of the spongiosa with enlargement of the medulla; deforming arthrosis without ankylosis, and pathologic fractures without callus formation. These changes are partly of trophoneurotic nature, as a result of the involvement of the nerves or of the blood vessels, arising partly through nodules of leprous tissue or through diffuse lepromatous infiltration. Enlargement of the nutritional canals is attributed to the leprotic blood vessels. The diffuse rarefaction, and the resorption and destruction of the diaphysis, occur in other diseases; but the widening of the nutritional canals and the circumscribed destruction of the epimetaphysary parts and under the periosteum are considered pathognomonic for leprosy.—[From abstract in *Zentralbl. f. Haut- u. Geschlechtskr.* **60** (1938) 410.]

Brumpt, L. C. La ponction de la moelle osseuse dans la lèpre; présence du bacille de Hansen et de la cellule écumeuse de Virchow. [Puncture of the bone marrow in leprosy; presence of the Hansen bacillus and the foamy cell of Virchow.] *Presse Mèd.* **48** (1940) June 1 (abstract).

Smears of bone marrow obtained by sternal puncture, stained by the Ziehl-Neelsen method, have shown bacilli in 7 out of 10 untreated lepromatous or mixed cases, and in 1 out of 7 treated cases. The examination was negative in one case each of tuberculoid and pure neural leprosy. The method seems to give less constant findings than the examination of lymph or of nasal mucus, or by lymph node puncture, but it may be positive when the others are negative, and thus have application in early cases, during the course of treatment, and in neural forms. Panoptic staining has permitted establishing the myelogram of leprosy. In its chronic form it shows an increase of the hyaline leucocytes, particularly of the elements of the reticulo-endothelial system—histiocytes, plasmocytes and monocytes. An abnormal element, the foamy cell of Virchow, has been seen each time that bacilli were found; the myelogram seems to prove it to be of plasmocyte origin. It is suggested that cultures may be attempted with the medullary juice rich in bacilli, in a state of purity.

Tajiri, I. Lepröse Veränderungen der Zähne. [Leprous changes of the teeth.] Japanese Jour. Dermat. & Urol. **46** (1939) 67 (abstract).

The author has examined 25 teeth from 17 lepers, finding leprous changes most marked in the pulp and the dental periosteum; the dentine and cement are less affected. The upper and lower canine teeth are most markedly affected. Such changes are observed only in nodular cases.—[From abstract.]

PECHKOVSKY G. [The functional condition of the reticulo-endothelial system in leprosy.] Vestnik Venerol. i Dermat. (1938) 3-10.

Leprosy bacilli are taken up exclusively by mononuclear cells (macrophages) which originate from the reticulo-endothelial system. In order to investigate the functions of that system, the numbers of the monocytes and the capacity of the reticulum cells to take up the bacilli are determined; the latter also ingest other products and pigments. In lepers the leucocyte formula is determined every 10 days, and Congo red is injected intravenously once or twice a month. In cases in a stationary condition the blood picture and the Congo-red index also continue without change. In cases in which the disease is progressing, there is increase in the numbers of monocytes and also in the phagocytic activity of the reticulum cells. In the highest stage of development of the disease, however, the phagocytic activity is very much reduced or indeed entirely lacking. It is concluded that the functional activity of the reticulum cells is in close relation with the condition of the leprosy patient, and that it also varies according to the changes of the condition.—[From abstract in *Zentralbl. f. Haut- u. Geschlechtskr.* **60** (1938) 638.]

MITSUDA, K. Ueber die Lymphdruse von Lepra tuberosa. [The lymph nodes in nodular leprosy.] Japanese Jour. Dermat. & Urol. **46** (1939) (1939) 68 (abstract).

Leprous nodules and leprous infiltrations are accompanied by swelling of the regional lymph nodes, which show thickening of the capsule and deposition of hemosiderin in the endothelial and reticular cells of the sinuses. The reticulum cells in the germinative centers phagocytize the bacilli. Such changes are apparent in the peripheral lymph nodes, whereas those found in the thoracic and abdominal cavities, except the portal nodes, are less affected. The conclusion is drawn that the reticulo-endothelial tissue and the histiocytes represent a defensive system against the invasion of leprosy bacilli.—[From abstract.]

MINAMI, K. Zusammenfassung der Beobachtungen über Nervenveränderungen am leprösen Augapfel. [Observations on nerve changes in the leprous eyeball.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 39 (abstract).

Studying the nerves in the various parts of the eye in cases of nodular leprosy, the author has found swelling of the fibers, stratification in tortuous forms, segmentation, hypoimpregnation, splitting up of the fibrils into granular and drop-shaped forms, vacuole formation and degeneration. In general the degree of these changes was the more marked the longer the duration of the disease, and also in the parts with the more extensive cellular infiltration or the more numerous bacilli; they were very marked in phthisis bulbi. Bacilli were abundant in the nerve bundles or in their neighborhood. Changes of high grade occur in the anterior half of the bulb, relatively slight in the posterior half.—[From abstract.]

MORIYA, M. Ueber lepröse Veränderungen der Blase. [Leprous changes of the bladder.] Trans. 12th Meet., Japanese Lep. Assoc., 1938. La Lepro **10** (1939) suppl. 47 (abstract).

In histological examinations of the bladders of 30 cases of nodular leprosy, four of them were found to have, in the mucosa, submucosa and the interstitial tissue of the muscle bundles, foamy lepra cells. Bacilli could be found in them, mostly undergoing retrogressive metamorphosis.—[From abstract.]

HAYASHI, Y. Statistische Angaben über Sektionsbefunde an 1200 Leprafällen. [Statistical report on autopsy findings in 1,200 cases of leprosy.] Trans. 12th Meet., Japanese Lep. Assoc., 1938; Special Address. La Lepro **10** (1939) suppl. 23-25 (abstract).

This is a long but condensed statement of the findings in 1,200 autopsies performed at the Zensei leprosarium between 1910 and 1927. First, however, data on mortality in all of the official leprosaria in Japan up to 1937 are given: 5,443 cases, with annual death rates as follows: average, 7.5%; nodular leprosy, 7.7%; neural, 5.6%; macular 5.1%. Principal causes of death: tuberculosis, 30.6%; nephritis, 15%; leprous debility, 6.8%; pneumonia, 5.5%; septicopyemia, 5.1%. Regarding the Zensei cases particularly investigated, more complete data are given on this point (tuberculosis, 41.3%; nephritis, 21.2%; septicopyemia, 10.9%; etc.). Special attention is given to the following subjects: the tuberculous complications in general (found in 71.4% of all cases), tuberculous affection of the kidneys (14.8%), nephritis, apoplexy, carcinoma, bone changes and the weights of the principal viscera. Carcinoma was found in 18 cases, or 1.5%, about one-half of the general rate for Japan. Leprous changes in the bone were often in the frontal, tibial, finger and toe bones, seldom in the cranial and elbow bones. Deformities of the hands and feet were caused mainly by burns and whitlow, not by the leprous changes proper. —H. W. W.

FITE, G. L. The fuchsin-formaldehyde method of staining acid-fast bacilli in paraffin sections. Jour. Lab. & Clin. Med. **25** (1940) 743-744; *also* Canadian Jour. Med. Technol. **2** (1940) No. 4, Sept.

Treatment of sections stained for acid-fast bacilli with pure formaldehyde, either before or after treatment with acid alcohol, rendered the organisms of a deep blue color and resistant to further bleaching of the sections with potassium permanganate and oxalic acid. Van Gieson's stain was used as the counterstain. —AUTHOR'S ABSTRACT

RYU, E. Studies on the simplification of special staining method of bacteria. I. Kitasato Arch. Exper. Med. **17** (1940) 53-57.

Three simple methods of staining bacteria are given: for metachromatic granules of the diphtheria bacillus, for other granules of bacterial bodies, and for the tubercle bacillus. The last, said to give better results than the Ziehl-Neelsen method, consists of placing one or two loopfuls of 3% watery caustic potash solution on a slide and mixing with it a small quantity of sputum or other material. After smearing, drying and fixing, a few drops of 0.05% fuchsin solution are added and the slide passed through a flame until it boils. After standing for 20 to 40 seconds it is washed and counterstained with methylene blue. Of 80 sputa so stained 69 were found positive, whereas only 58 were positive after the usual method. Cultured acid-fast organisms are well stained and with an emulsion

of rat leprosy tissue there was distinct staining of both bacterial bodies and granules. —H. W. W.

TODA, T., URABE, K. AND YAMADA, M. Experiment on cultivation of Mycobacterium leprae. Studies on the growth-promoting factors for acid-fast bacteria. Trans. 12th Meet. Japanese Lep. Assoc., La Lepro **10** (1939) suppl. 68 (abstract).

The authors have used a special "modified method of symbiosis," attained by means of a special "coupling tube," whereby other living organisms influence the leprosy bacillus. The two organisms mentioned as examples are *B. subtilis* and *M. tuberculosis*. By this method more multiplication is obtained than by other methods, but subcultures were not obtained. —H. W. W.

TODA, T., URABE, K. AND YAMADA, M. Untersuchungen über die kultur der Leprabacillen. [Investigations in the cultivation of the leprosy bacillus.] La Lepro **10** (1939) suppl. 57 (abstract).

Having endeavored for ten years to cultivate the human and rat leprosy bacilli, the authors have concluded that these organisms do not grow on Petragnani's medium, or others ordinarily used for the tubercle bacillus; that the various strains of acid-fast bacilli that numerous workers have cultivated on ordinary media from material of these infections are all saprophytes; that, also, the leprosy bacilli are not cultivable by anerobic methods; that they may multiply in tissue cultures without, however, notable further growth; and that at times they will grow on the chorioallanois, but not always. With regard to their special method [referred to in the preceding abstract], they have found that growth of the rat leprosy bacillus occurs somewhat more quickly than that of the human bacillus.—[From abstract.]

BADGER, L. F., PATRICK, D. W., FITE, G. L. AND WOLFE, D. Leprosy: Two strains of acid-fast bacilli isolated from a case of human leprosy. A comparison with other strains of acid-fast organisms with particular reference to the Lleras bacillus. Nat. Inst. Health, Bull. No. 173, 1940, pp. 1-44.

Three acid-fast organisms isolated from cases of leprosy, and also that of Lleras Acosta, were found to be nonpathogenic for the common laboratory animals. They were of slightly different cultural characteristics. Agglutination reactions showed that they produced both specific and heterologous (group) agglutinins. Antigens prepared from these organisms were used in complement fixation tests and skin sensitivity tests, and were compared with tuberculin tests and serological tests for syphilis, Wassermann and Kahn reactions in lepers. The skin sensitivity to the purified protein derivative of the tubercle bacillus compared closely with that to the antigens prepared, and was most commonly positive in bacteriologically negative, maculoanesthetic cases. The complement fixation tests agreed closely with others in which a tubercle-bacillus antigen was used, and also fairly closely with the Wassermann and Kahn reactions; they were found positive most commonly in the bacteriologically positive, nodular infiltrative cases. The organisms isolated were considered not to be etiologically related to leprosy. —AUTHORS' ABSTRACT

OTA, M. Ueber Impfversuche der menschlichen und Rattenlepra auf Tiere, Haushühner und Vögel. [Injection experiments with human and rat leprosy in animals, domestic hens and birds.] Trans. 12th Meet., Japanese Lep. Assoc., 1938; Special Address. La Lepro **10** (1939) suppl. 27 (abstract).

This is a summary of results obtained during several years by the author and collaborators in Sendai and Tokyo [see THE JOURNAL **6** (1938) 467 and **8** (1940) 81-85]. Special emphasis is given the findings in the hen. Out of more than 100 injected with heavy suspensions into the breast muscles, about one-half developed leprous granulomas that appeared as orange-yellow streaks or nodules. These changes were generally apparent within 3 months and persisted for from 6 to 12 months or longer. Histologically these granulomas consist of circumscribed accumulations of clear, large cells that are not unlike the lepra cells of the human disease. Small necrotic foci were often found. Sudan III revealed an abundant fat content. Bacilli were most numerous after 3 to 6 months. There were to be found one or more grayish nodulations on the surface of the liver, these also having the microscopic character of the leprous granuloma, though they contained at most only sparse bacilli, and usually none. Transfer to a second animal has not been accomplished. —H. W. W.

OTA, M. AND SATO, S. Lepröse Veränderungen an der Leber mit menschlichen bzw. Rattenlepramaterial intramuskulär inokulierten Hühnern. [Leprous changes in the liver, in fowl inoculated intramuscularly with human or rat leprosy material.] Japanese Jour. Dermat. & Urol. **47** (1940) 41 (abstract).

The authors have repeatedly pointed out that among the usual laboratory animals the fowl is the most susceptible to both human and rat leprosy. In some proportion of those that are inoculated in the breast muscles one observes, besides the formation of typical leprous granulomata at the site of inoculation, even more frequently certain changes in the liver that appear macroscopically as multiple nodules or diffuse spots. Here, too, microscopically the condition is a granuloma with large, distinct lepra cells; but acid-fast bacilli can seldom be detected, and when they are present they are few in numbers.—[From abstract.]

BURNET, E. AND JADFARD, H. Transmission de la lèpre humaine au hamster par voie digestive. [Transmission of human leprosy to the hamster by the digestive route.] Bull. Acad. Méd. **122** (1939) 383-388.

The authors fed a hamster (*Cricetus auratus*) for 12 days on material rich in bacilli taken from human liver. Nine months later it became ill and died. There were no outward signs of disease, but leprous foci were found in the lungs and liver and in the mesenteric lymph nodes, with characteristic lepra cells and bunches of bacilli. It is concluded that the digestive tract should be considered seriously as a route of infection.—[From abstract in *Lep. Rev.* **11** (1940) 150.]

PEYRON, A. AND MARIE-SUZANNE (Seur). Action cancérigene d'un tissu autolysé de léprome humain sur la glande interstitielle du testicule du rat. [Cancerogenic action of an autolyzed human leproma on the interstitial gland of the testicle of the rat.] Compt. rend. Acad. Sci. **209** (1939) 581-583.

The authors took from an L2-N1 case portions of a leproma of the jaw, containing abundant bacilli, and kept it for fifty days in distilled water, where it underwent little change. The material was then emulsified and injected into the scrotums of four adult rats, and into the axillary and inguinal regions of three female rats. The female rats manifested no other reaction than an ordinary reabsorption granuloma. Two of the others, however, developed perceptible tumors in the third month. The first one had an enormous scrotal tumor encroaching on the abdomen, and a pleural metastasis 2.5 cm. in length. The tumor presented all the traits of malignant tumors of the interstitial cells, together with general signs of carcinomatous intoxication. In the second rat, killed before the other, the tumor was still benign but histologically all the more characteristic. No doubt is seen of the causal relation between the injection of leprous tissue and the appearance of the tumors. Since spontaneous tumors in the interstitial glands of the testicles are rare—none have been found among a large number of rat tumors, or in the large collection of the Croker Institute—the lesions described could have been caused only by the bacillus itself or the products of the autolysis of the leproma. Neither of these hypotheses can be considered satisfactory, though in favor of the former assumption can be invoked observations of Jensen's sarcoma, the appearance of which was likewise provoked by the injection of acid-resisting bacilli derived from a pseudotuberculosis of the intestine of an ox.—[From the *Jour. American Med. Assoc.* **113** (1939) 1747, Foreign Letters.]

MITSUDA, K. Demonstration von tuberkuloidem Gewebe im Schweindchenhoden nach Impfung mit Leprabazillen. [Demonstration of tuberculoid tissue in the testicle of a young pig after inoculation with leprosy bacilli.] Japanese Jour. Dermat. & Urol. **46** (1939) 68 (abstract).

A leprosy bacillus emulsion was injected in the testicular substance of small pigs and after 10, 20 and 27 days histological examinations were made. The foci of infiltration were composed of epithelioid cells and Langhans giant cells centrally, and round cells in the peripheral zone. Bacilli were found in the giant cells.—[From abstract.]

BERTRAND, I., BABLET, J. AND BLOCK, F. Sur l'inoculation intracérebrale au lapin de bacilles acid-résistants isolés chez les lépreux. [Intracerebral inoculation of the rabbit with acid-fast bacilli isolated from lepers.] Compt. rend. Soc. Biol. **130** (1939) 1565-1566.

This is a report on the results of intracerebral inoculation in rabbits with acid-fast bacilli obtained from leprosy patients. The strains isolated by Chaussinand at Saigon, and those of Levy, of Hyggo and Uchida (Tokyo) and of Kedrowsky have been used by the technique which the authors had previously employed in the case of tubercle and paratubercle bacilli. The first three forms gave negative results, but Kedrowsky's bacillus produced lesions similar to those caused by paratubercle bacilli. The authors therefore conclude that this organism is a bovine tubercle bacillus isolated from a leprosy patient infected by both it and the true leprosy bacillus.—[From abstract in *Trop. Dis. Bull.* **36** (1939) 1019.]

TANIMURA, T. AND YAMAMOTO, M. Ueber Lungenveränderungen bei Kaninchen, denen wiederholt Leprabazillen und diesen ähnliche säure-

feste Bazillen in die Vene eingespritzt wurden, und die Beziehungen dieser Veränderungen zu denen bei Tuberkulose. [The lung changes in rabbits repeatedly injected intravenously with leprosy bacilli and similar acid-fast bacilli, and the relation of these changes to those of tuberculosis.] Trans. 12th Meet. Japanese Lep. Assoc. 1938, La Lepro **10** (1939) suppl. 49 (abstract).

[This abstract is identical with the one dealt with in the following item.]

YAMAMOTO, M. Klinische und experimentelle Untersuchungen über die Veränderungen der Lungen bei Lepra. IV. Ueber Lungenveränderungen bei Kanninchen denen wiederholt Leprabazillen in die vene engespritzt wurden, und die Beziehungen dieser Veränderungen zu denen bei Tuberkulose. [Clinical and experimental investigations of the lung changes in leprosy. IV. The lung changes in rabbits repeatedly injected intravenously with leprosy bacilli and similar acid-fast bacilli, and the relations of these changes to those of tuberculosis.] La Lepro **10** (1939) suppl. 3-4 (abstract).

Continuing work previously noticed [THE JOURNAL **6** (1938) 584 and **8** (1940) 122], the author here reports on lung changes in rabbits induced by repeated intravenous injections with suspensions of leprosy nodules in which the bacilli had been caused to multiply more or less definitely by Nojima's method, and also with other organisms, including the rat leprosy bacillus, Ota's bacilli and acid-fast organisms from water. With the leprosy bacilli there were produced foci of chronic inflammatory changes of leprotic nature. The bacilli, usually in groups, were present in them, and also in lymph spaces, their arrangement and appearance not suggestive of tubercle bacilli. Quite similar changes were induced by the other organisms employed. In other experiments rabbits were injected with human or bovine tubercle bacilli before the leprosy material was given; in those animals two kinds of lesions were to be found, tuberculous and leprous, until the former overwhelmed the latter. —H. W. W.

YAMAMOTO, M. Klinische und experimentelle Untersuchungen über die Veränderungen der Lungen bei Lepra. V. Ueber Lungenveränderungen bei Mäusen weissen Ratten und Hühnern. [V. The lung changes in mice, white rats and hens.] La Lepro **10** (1939) suppl. 7-8 (abstract).

These animals were injected with human and rat leprosy bacilli and the organs, especially the lungs, were examined histologically. The human material, treated as described above, was injected repeatedly into mice, in the subcutaneous tissue of the back; in the alveolar walls of the lungs there was found a chronic inflammatory condition in which bacilli were demonstrable at times. White rats, injected in the skin of the abdomen with the so-called true rat leprosy bacillus of Nishimura, were killed after a year; cellular infiltration could be demonstrated in the lungs and, here and there, isolated bacilli. Hens were injected with the human leprosy material, bilaterally in the breast muscle, 1 or 2 times; in the injected muscle the bacilli increased more or less definitely, and in the lungs there was slight to massive cellular infiltration, in parts of which acid-fast bacilli could be found. —H. W. W.

YAMAMOTO, M. Klinische und experimentelle Untersuchungen über die Veränderungen der Lungen bei Lepra. VI. Ueber den Einfluss der alimentiellen Azidosis auf Veränderungen der Lungen durch Injektion von Lepra- und denen ähnlichen säurefesten Bazillen. [VI. The influence of alimentary acidosis on the changes in the lungs induced by the injection of leprosy bacilli and similar acid-fast organisms.] La Lepro **10** (1939) suppl. 51 (abstract).

White male rabbits weighing about 1 kgm. were given, after an observation period, daily feedings of 5 gm. of cane sugar with *okara* and a small amount of fresh grass. After about two weeks they were injected intravenously with the leprosy organisms described in the second abstract above. After various periods (1 and 2 days, and 1 and 2 weeks), in some instances without further injections and in others with daily injections, the animals were killed. The lung changes found were much more marked in these animals with alimentary acidosis than in untreated controls, manifested in high grade hyperemia, hemorrhage and cellular infiltration. The longer the time the animals had been so fed, the more marked these changes. —H. W. W.

RADNA, R. Sur les réactions sérologiques syphilitiques chez les lépreux. [Serological reactions of syphilis in lepers.] Ann. Soc. belge Méd. trop. **19** (1939) 413-421.

This study, made in a country where yaws exists, with the Kahn, Hecht, Meinicke and Wassermann (Calmette-Massol) reactions, has led the author to the conclusion that positive reactions in lepers indicate infection with yaws or syphilis. In summary, positive reactions were obtained as follows ("history" signifying history of yaws or syphilis):

	Comp. fix.	*Meinicke*	*Kahn*
Lepers (total)	39	39	42
Nonlepers (total)	43	43	42
Lepers with positive history	72	70	65
Nonlepers with positive history	65	62	58
Lepers with negative history	21	13	25
Nonlepers with negative history	25	28	28

—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 74.]

RADNA, R. Sur la réaction de Witebsky-Klingenstein-Kuhn dans la lèpre. [On the Witebsky-Klingenstein-Kuhn reaction in leprosy.] Ann. Soc. belge Méd. trop. **19** (1939) 407-412.

It is recommended that, the patient's serum having been heated at 56°C for 30 minutes, it be heated for a further 15 minutes at 59-60°. The reaction is really useful only when it leads to a diagnosis in cases in which leprosy is not clinically evident. The author has obtained positive reactions in 96% of neural cases belonging to the Ns, Na and NsNa groups, but in only 35% of cases of tuberculoid leprosy. By following the results after treatment for yaws or syphilis, one can exclude or confirm the presence of these infections. The reaction has been found positive in clinically healthy children in leprous surroundings, in whom later bacilli have been found in the mesenteric [*sic*] lymph nodes. It, therefore, can be applied in the search for latent leprosy.—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 71.]

BLACK, S. H. AND ROSS, H. The complement fixation reaction of Lleras in leprosy. Publ. Health Rep. **54** (1939) 392-399.

This is a report of a comprehensive trial of Lleras' complement fixation reaction, the antigen of which is prepared from an acid-fast bacillus which he cultivated from a case of leprosy. He claimed positive reactions in 99.4% of bacteriologically positive cases, and 92.5% in neural cases, but only 1.5% positive in other diseases. The present authors tested 188 cases of leprosy—164 bacteriologically positive and 24 negative—and 379 nonleprous cases, including 50 of tuberculosis and 329 others, with results as follows:

	Lepers		*Nonlepers*	
Reactions	*Positive*	*Negative*	*Tuberculous*	*Others*
Strongly positive.....	104	1	1	6
Moderately positive....	31	4	0	4
Weakly positive.....	20	4	2	23
Percentages.....	94.5	37.5	6.0	10.0

It is concluded, because of the small proportion of positive reactions among the bacteriologically negative cases of leprosy, and the occurrence of positive results in the nonleprous cases, that the reaction is not of practical value in diagnosis.—[From abstracts.]

MORIYA, M. Yosidasche Reaktion bei Leprösen. [The Yosida reaction in lepers.] Japanese Jour. Dermat. & Urol. **46** (1939) 104 (abstract).

In lepers with complicating tuberculosis this reaction proved positive in 54%, whereas in nonleprous tuberculous patients it was always positive. Its intensity is proportionate to the degree of the disease in nonleprous tuberculous patients, but varies in tuberculous lepers. With leprosy alone it is always negative.—[From abstract.]

BERNY, P. AND MAUZÉ, J. Une nouvelle méthode de diagnostic de la lèpre par intradermo-réaction. (Note préliminaire.) [A new method of the diagnosis of leprosy by an intradermal reaction; preliminary note.] Bull. Soc. Path. exot. **33** (1940) 239-243.

Following the method used by Max-Aron in cancer, the authors have prepared an antigen from the urine of cases of open leprosy, testing it by intradermal injection on lepers and healthy subjects. To fresh urine from 8 bacteriologically positive cases, all free from albumin, was added three volumes of 95% alcohol. After 24 hours the precipitate that formed was decanted, centrifuged and dried in vaccuo. A 3% solution was made in saline, filtered, treated with ammonia (10 drops per 100 cc.), filtered again, and adjusted to pH 6.4-6.6 with acetic acid. The resulting fluid, clear and not clouded by heating, was tested for sterility and stored in ampules in the refrigerator. The tests were made by injection of 2 or 3 drops in the deltoid region, with a distilled-water control on the other, in 199 patients with leprosy of all stages, 5 suspects, and 91 noncontact nonlepers. After 8, 24 and 48 hours the axillary temperature was taken, the reaction lesions measured, and symptoms recorded. It is stated that in lepers there is provoked an elevation of temperature (38-39° after 8 hours), and the formation of a papule larger than 1 cm. (from the 8th to the 24th hour), with erythema and pain in most cases. In nonlepers there is no

increase of temperature and the papule, never erythematous, is always less than 1 cm. in size. —H. W. W.

GAVRILOV, W. AND FESTER, A. Le bacille de Stefansky et la culture de tissus des divers animaux de laboratoire. [The Stefansky bacillus and tissue cultures of different laboratory animals.] Ann. Soc. belge Méd. trop. **19** (1939) 367-376.

On various media (potato, glycerine agar, glycerinated Dorset medium) to which were added products obtained from the hypoderm of the receptive animal, the Stefansky bacillus undergoes a very slow evolution—periods of multiplication, stasis, and decrease. Positive results have been obtained in 10% of the cultures made. Introduced into tissue cultures, the bacillus behaves differently according to whether or not the tissue came from a receptive animal. In the former case they are phagocytozed by the cells (fibroblasts), and there they long retain their normal appearance; isolated ones in the cytoplasm disappear, losing their acid-fastness. With the tissues of the guinea-pig, or even of the chick embryo, phagocytosis is absent or nearly so; the bacilli remain free and disintegrate. When the Kedrowsky bacillus is used in this manner, it is not phagocytozed by the fibroblasts but grows as a saprophyte.—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 78.]

GAVRILOV, W., DUBOIS, A. AND FESTER, A. Influence de l'avitaminose sur l'infection des cobayes par le bacille de Stefansky. [Influence of avitaminosis on the infection of guinea-pigs with the Stefansky bacillus.] Ann. Soc. belge Méd. trop. **19** (1939) 361-366.

Guinea-pigs injected with the Stefansky bacillus were submitted to three types of diets, deficient in vitamins A, C and D and proteins. The most deficient one was found to give the most marked results. While in normal guinea-pigs the bacillus can at most survive for a time, in those on deficient diets they gave rise to abscesses or granulomata at the point of injection. In one instance, only, passage was made to four rats, in one of which there were found in the lungs monocytes charged with bacilli, and in another a local leproma with caseous center, similar to those which this bacillus causes in the rat. The regimens were very severe, and it was necessary to supplement them occasionally. In this way better results were obtained than with a less severe regimen with little supplementation.—[From abstract in *Bull. Inst. Pasteur* **38** (1940) 80.]

BADGER, L. F., MASUNAGA, E. AND WOLFE, D. Leprosy: Vitamin B_1 deficiency and rat leprosy. Pub. Health Rep. **55** (1940) 1027-1041.

The incubation period of rat leprosy in rats maintained on a vitamin B_1 free diet is definitely shorter than in rats maintained on a normal control diet. Evidence has been obtained which suggests that the increased susceptibility is due specifically to the vitamin B_1 deficiency. Rats maintained on the deficient diet which received purified vitamin B_1 as a supplement are no more susceptible than are normal rats. Rats maintained on a calcium deficient diet are approximately as susceptible as those maintained on the vitamin B_1 free diet. Evidence has been obtained whieh has shown the rats maintained on the calcium-deficient diet to be

deficient also in vitamin B_1 through the inability to utilize the vitamin B_1 available in the diet. —AUTHORS' ABSTRACT

BADGER, L. F. AND FITE, G. L. Leprosy: Variations in the virulence of strains of rat leprosy. Nat. Inst. Health, Bull. No. 173, 1940, pp. 77-83.

Three strains of rat leprosy, originally obtained from wild rats in Florida, San Francisco and Hawaii, were found to possess slightly different degrees of virulence in experimental inoculations. —AUTHORS' ABSTRACT

HASHIMOTO, T. AND KINEBUCHI, Z. Ueber die experimentelle Rattenlepra durch den Trinkerversuch der säurefesten Wasserbazillen-Aufschwemmung erzeugt. [Experimental rat leprosy caused by drinking of suspensions of an acid-resistant water bacillus.] Japanese Jour. Dermat. & Urol. **45** (1939) 114 (abstract).

As in natural rat leprosy, the authors were able to produce lesions in several domestic rats by ingestion of emulsions of acid-fast water bacilli. These changes consisted of falling of the hair, infiltration of the skin and slight swelling of lymphatic glands with positive findings of bacilli. With 17 rats out of 50 the experiment lasted for one month, and in 9 of them the so-called rat leprous changes were observed. Two showed skin infiltrations and falling of hair. Typical histological changes were found, and plenty of acid-fast bacilli. Seven others had slight swelling of lymphatic glands with acid-fast bacilli, but no skin changes. The 6 strains of bacilli used had been under cultivation for a long time, and for one month before the experiments they had been kept in glycerine bouillon, which for use was diluted twenty times with water. As for the relation between the kind of bacilli and the pathologic changes, nothing definite can be said as yet, but the kinds that caused the skin changes are grayish-white strains that produce little pigment.—[From abstract.]

FITE, G. L. Leprosy: The pathology of experimental rat leprosy. Nat. Inst. Health, Bull. No. 173, 1940, pp. 45-76.

The lesions of rat leprosy resulting from inoculations by various routes were studied in rats, mice, mongooses, guinea-pigs, rabbits, dogs and monkeys. After subcutaneous inoculation in rats the organisms were found to adhere to connective tissue fibers, and not to reach neighboring lymph nodes until 3 to 5 weeks after inoculation. Necrotic areas in lepromas were found to begin as anemic infarcts; caseation and allergic necrosis did not constitute part of the picture. The strain of albino mice used was highly susceptible to rat leprosy. Mongooses and guinea-pigs were found to develop resistance to the infection only after a preliminary period of advancement of the lesions. —AUTHOR'S ABSTRACT

KRAKOWER, C. AND GONZÁLEZ, L. M. Mouse leprosy. Arch. Path. **30** (1940) 308-329.

Spontaneous leprosy found in a wild brown mouse has been transmitted to ordinary albino mice and rats, employing the usual routes of inoculation (intramuscular, subcutaneous and intraperitoneal). The disease produced in them resembles grossly the experimentally transmitted rat leprosy (Stefansky) in rats. With inocula rich in mouse lepra bacilli the

disease in the mouse and rat evolves within 6 to 9 months, producing a large local lesion with widespread lesions in skin, lymph nodes and viscera. Histologically there are important differences in the lesions of the infected mice as compared with that of the rats. In the mouse, the lepra cell is more uniform in shape and size, resembling a hypertrophied hematogenous monocyte measuring about 15 micra in diameter. The bacilli within the cell are discrete and individual but very heavily concentrated, more than in rat or human lepra cells. There are fewer giant cells than in the rat, with fewer nuclei; these cells are smaller in size and never assume the appearances of the Langhans type. Rosettes are not found. There is a small amount of reticulum supporting these cells and cytolytic necroses are frequent, often involving the greater bulk of the leproma. By contrast, in the rat the lepra cell is more of epithelioid form, varying from 10-25 micra in diameter; the concentration of bacilli is less; giant cells are frequent and large, with many of the Langhans type; rosettes are present; there is a richer reticulum supporting the cells, and the necroses are largely of anemic infarcted type. —AUTHORS' ABSTRACT

WATANABE, Y. AND NONAKA, N. On the placental infection of the fetus of white rat by rat lepra bacillus. Kitasato Arch. Exper. Med. 16 (1939) 9 (abstract).

It is found that the Stefansky bacillus passes through Chamberlain L_2 and L_3 and also Berkefeld V filters. Inoculated into animals, the filtrate organism takes a long time before it shows typical forms. No organism is seen for about three months; leprous changes appear in six months at the site of inoculation and in the regional lymph nodes. The filterability of the organism suggested the possibility of passage from mother to fetus, and experiments showed that this happens in some cases. Subcutaneous inoculation of a mother animal ordinarily produces a leproma, but later some of the organisms pass into the blood stream and finally infect the fetus through the placenta.—[From abstract.]

BOOK REVIEW

BURGESS, PERRY. Who Walk Alone. Illustrated. Pp. i-viii, 1-312. Henry Holt and Company, New York and San Francisco, 1940. $2.75.

This book, which may be classed as purposeful fiction, purports to be the story of an American soldier who served in the Philippines during the Spanish-American war and who years later, after he had returned to the United States and was becoming well established, developed leprosy. It is not, however, in any sense biographical, for the actual individual who had had that experience and had gone back to the Philippines to enter the Culion colony was of quite different background and character. The author, who is the president of the Leonard Wood Memorial, knew him personally and used his experience and especially his accomplishments in the leper colony as the basic framework of the story, but its actual form, texture and spirit derive entirely from the author.

To quote a review by Chas. F. Craig in the *American Journal of Tropical Medicine:* "This book is written as a tribute to this man who, despite the terrible disease from which he suffered, found work to do in the leprosy colony .... and made a success of a life apparently doomed to failure. The

book is also offered, as the author says 'to all those others who have fought or are fighting silently and alone one of the most tragic battles that can confront men anywhere.' The story is beautifully and touchingly told and should prove an inspiration, not only to those 'who walk alone' but to all who suffer from physical ills that are incurable and so often kill initiative and a desire to succeed. It should also serve to dispel the ridiculous fear of leprosy that still survives among otherwise intelligent people and should awaken increased sympathy for those who suffer from this infection."

The author has been honored by two awards for this work. One is the Bookseller's Discovery Award, for 1940, one of three awards given each year by The American Bookseller's Association. The other is a gold medal of the Society of the Libraries of New York University, which is described as "intended to bring public attention to a book not as widely read as it deserves."

A few passages from the remarks of one of the committee who made the latter award may be quoted: "The plainness of the narrative in Who Walk Alone must reflect the author's desire to make the truth convincing.... There is a curious honesty about Ned Langford.... This direct manner of telling a story commends itself to those who do not enjoy literature as a game of ingenuous devices.... I cannot picture a reader who will not be moved by the experience, the tragedy and the spiritual victory of Ned Langford. His decent conduct ennobles the human race, which throws up so many sorry specimens. The story teller permits us to admire this, to feel it vicariously, without bombast or vain glory. Just as Ned Langford co-operates willingly, so we join willingly in admiring his reticence, his capacity for meeting disaster without fear, his solid common sense. When he has conquered his appetites and his doubts no walls can hold him. 'I am free,' he says. 'My spirit is out in the fields, in the woods, running through the towns. In the flesh I am still in prison. But the essential "I" has escaped.' The important thing to remember about the essential 'I' is that it is not egotism; it is unselfish service." —H. W. W.