CURRENT LITERATURE

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

[JAPANESE LEPROSY ASSOCIATION] The 31st General Meeting of the Japanese Leprosy Association. La Lepro **27** (1958) No. 4.

This issue of *La Lepro* is devoted to the transactions of the 31st annual meeting of the J.L.A., held in Matsumoto, May 20-23, 1958. In this instance nothing is in English except the list of presentations. There were 2 "special discourses," one by T. OGATA on Some Pathological Investigations of Leprosy, Particularly on the Classification of Leprosy; and one by K. TANIOKU on Pharmacological Studies on Anti-leprous Drugs, Particularly on the Metabolism. There were also 3 "special speeches," one by M. ISHIDATE and Y. YAMAMOTO on Metabolic Pattern of Promin and Sodium N-Sulfathiazole Glucoside Sulfonate, one by O. TAMEMASA on Application of the Metabolic Studies of Mycobacteria to the Fundamental Problems of Leprosy Chemotherapy, and one by Y. SATAKE, On 4-4'-diacetaminodiphenylsulfone. Eighty-two regular papers are listed, covering a very wide range of subjects from epidemiology to surgery. The special presentations are published, apparently in full, and there are abstracts of all 82 other papers.—H. W. W.

LATAPI, F. Acción contra la lepra. [Action against leprosy.] Dermatología (Mexico) **1** (1956) 73-77.

The larger sources of leprosy in Mexico are estimated to have 50,000 cases. The dermatologists and the general practitioners with training in dermatology are the most successful in diagnosing cases. In the dermatology clinics cases of leprosy are more frequent than those of tuberculosis or syphilis. In the first era of the fight against leprosy the methods used were primitive, or even barbaric in that sometimes the patients were even killed. Then came the era of compulsory segregation in leprosaria, which gave no good results but on the contrary increased the spread of the disease. The work accomplished in Mexico with the help of private initiative is discussed. The Asociación Mexicana de Acción contra la Lepra was founded in 1948 with the following purposes: to give better medical care, and attention to the social problems of the patients; to give protection to the children, patients and contacts; to teach leprology to students and physicians; and, lastly, to publish the journal *Dermatología,* to serve as the organ of information to dermatologists and leprologists.—M. MALACARA

QUIROGA, M. I. Lepra tuberculoide; problema social y hospitalario. [Tuberculoid leprosy; a social and hospital problem.] Día Médico **30** (1958) 80-87.

The purpose of this article is to make better known in Argentina the nature and features of tuberculoid leprosy, which are discussed briefly but thoroughly. This form of the disease is not well known by the general practitioners, or distinguished from the grave form. One reason is that it is not recognized in the leprosy law, which was promulgated before there was knowledge of it. Although the patients are noncontagious and are easily cured, they are made to suffer all the consequences of the antiquated concept of leprosy. They often lose their jobs, and—what is absurd—they are refused

admission to hospitals when hospitalization is needed for complications or intercurrent conditions. There is not only the possibility, but also a pressing need, of admitting them to dermatology clinics.—G. BASOMBRIO

PRICE, R. B. Relapse of leprosy in American Samoa. American J. Trop. Med. & Hyg. **8** (1959) 358-363.

During a six months period in 1957 and 1958 the author conducted a general survey of leprosy in American Samoa, populated by 20,000 Polynesians. The known prevalence was found to be 5.3 per 1,000, which included 81 patients in residence in the territory and 26 who have left the islands. Of the 81 resident patients, 40 were of the lepromatous type, 34 were tuberculoid, and 7 indeterminate. Of 24 old lepromatous cases which had been released from the leprosarium, 4 still harbored bacilli demonstrable in skin scrapings, and 6 others were clinically and histologically frankly reactivated as well. By contrast, of 23 old tuberculoid cases subjected to skin biopsy, only 2 evidenced histologic activity. It was concluded that lepromatous leprosy exhibits a strong tendency to relapse when suppressive sulfone chemotherapy has been discontinued, even if the patient had previously received as much as 5 years of treatment and had once been considered free of the disease. Tuberculoid leprosy, on the contrary, tends to undergo arrest of activity even when chemotherapy has been of brief duration and long since discontinued. Neglect of the follow-up of patients results in rapid deterioration of leprosy control.—AUTHOR'S ABSTRACT

RUTTAN, H. R. and WRONG, N. M. The leprosy problem in Canada with report of a case. Canadian Med. Assoc. J. **78** (1958) 19-21.

At present there is no focus of leprosy in Canada, but an odd case occurs from time to time in immigrants from endemic countries. A review of the history of the disease in this country from 1815 onwards shows that the largest focus developed in New Brunswick, where there were 289 cases. Before the passage of the Leprosy Act in 1906, the care of persons with leprosy was a provincial responsibility. Special hospitals were established at Tracadie, N.B., in 1844; at Darcy Island, B.C., in 1892; and finally at Bentinck Island, B.C., in 1923. A case of acute lepromatous leprosy is reported.—[From authors' summary copied in *Leprosy Briefs* **10** (1959) 40.]

BENEDIKTSSON, G. Nýr leprasjúklingur. [A new case of leprosy.] Laeknabladid (Iceland) **42** (1958) 71-78.

————Holdsveikin á Íslandi frá aldamótum. [Epidemiology of leprosy in Iceland since the beginning of this century. *Ibid.* 78-80.

The prevalence of leprosy has decreased in Iceland. In 1901 there were 169 cases; in 1920 there were 67; in 1940 there were 22; and in 1958 there were 8. A new case was reported in 1957 in a 60-year-old woman. From the ages of 6 to 18 years the patient had lived with her aunt who had leprosy, but since then she had not been in contact with any person known to be suffering from the disease.—[From Foreign Letters, *J. American Med. Assoc.* **170** (1959) 351, supplied by Sr. Hilary Ross.]

SCHULZ, E. Das Schicksal eines Leprakranken. [The fate of a leprosy patient.] Öff. Gesundh.-Dienst **20** (1958) 161-164.

A patient who had lived in Mexico and had been married to a Mexican woman for 12 years was found, after his return to Germany, to have tuberculoid leprosy. After he had been isolated in Hamburg for a time, isolation and professional ban were lifted by the Ministry of Health. This action is remarkable since he had, although few, bacilli in his nasal mucus, and always numerous bacilli in his tissue fluid. When, 9 years later, the patient was to be admitted to the hospital (because of the return of his wife and

children to Mexico and because of increasing crippling of his hands) he committed suicide. It is recommended that the regulations for general compulsory isolation of leprosy patients in Germany, which date back to 1900, be abolished.—E. KEIL

GHOSH, S. Infectivity of 'closed' cases. Leprosy in India **29** (1957) 37-38 (editorial).

The writer expresses the opinion that definite and concrete proof is necessary before the infectivity of "closed" cases of leprosy can be accepted. The usual arguments in favor of infectivity of such cases are critically examined. Infectivity of closed cases is usually presumed, from absence of a history of contact with an "open" case, i.e., absence of an open case and presence of a closed one in the household or neighborhood. The fallacies in this assumption are that contact with an open case might have been forgotten, or that such an open case might not have been known to be suffering from the disease, or that contact with such a case might have taken place outside the family or neighborhood. Although a few bacilli may be found in closed cases on meticulous examination, the chances of these bacilli being thrown out and conveyed to a healthy person coming in contact with him are remote. Study of the spread of leprosy in families in different countries reveals that the chances of infection from a closed case in a family are not significantly greater than from the population in general.—N. MUKERJEE

BHATTATHIRIPAD, T. N. N. Infectivity of non-lepromatous leprosy. Leprosy in India **29** (1957) 39-43.

The author is of the opinion that the so-called "closed" (nonlepromatous) cases of leprosy should also be considered as infective on the following grounds. The presence of leprosy bacilli can be demonstrated in such cases, and also in apparently healthy contacts, by special methods of examination. Infection of healthy persons from such cases may not be determined solely by the number of bacilli entering their body, but by other factors such as age and resistance of the contact person, and duration and nature of contact. The author has observed during field work that secondary cases are found even in the presence of a lepromatous case in a household or neighborhood, and in the presence of a nonlepromatous case in such situations, and he concludes that infection might have been transmitted by the latter type of cases. He holds that all active cases of leprosy, irrespective of the type of the disease, should be considered as infectious and that necessary precautions should be taken in this regard.—N. MUKERJEE

RODRIGUEZ, O. Manifestaciones tempranas de la lepra. [Early manifestations of leprosy.] Dermatología (Mexico) **1** (1956) 169-172.

The early manifestations may be cutaneous or neurologic. Mention is made of hypochromic and erythematous or erythematohypochromic spots of the face, neck, and extremities which have to be differentiated from other dermatoses; they are distinguished by sensory disturbances. Among the neurologic manifestations are changes in one or more of the superficial nerve trunks (e.g., facial, auricular, ulnar and peroneal), which are thickened. There are sensory disorders in the territory of these nerves, and amyotrophies of the face and hands. There are also vascular disturbances (cyanosis or eschemias), temporary or permanent, and changes of the temperature of the fingers, especially the little finger. Trophic and certain other changes are mentioned.—M. MALACARA

TORSUEV, N. A., AVTONOMOVA, V. V., BOBROVA, N. I., DAVLEKAMOVA, F. D., IVANENKO, T. A., KOZELSKII, V. M., POGORELOV, V. N., ROMANOVSKAYA, N. A., RUSANOVA, K. G., SIDERENKO, A. P., STEKLOVSKII, V. K., TETEVA, N. A. and YAKUPOVA, A. Z. [Initial manifestations of leprosy from data from leprosaria.] Sbornik Nauchnykh Rabot po Leprologii i Dermatologii (Rostov) **8** (1958) 21-66 (in Russian).

The article is based on information obtained from different leprosaria in the USSR. The 2,032 patients with initial symptoms investigated consisted of 1,420 nodular cases, 206 tuberculoid, and 406 nondifferentiated. The presence of hypochromic spots is most characteristic in the nondifferentiated form of leprosy (60%). In cases of the nodular type, macules are observed in only 37%; while in the tuberculoid type macules are seen in 76%, tuberopapular elements in 23%, and an eruptive type of polymorphous erythema in 1%. Simultaneously with the skin eruptions, some of the patients show affection of the general condition and other disturbances (increase of temperature, anhidrosis in the area of maculae, neuritis, impairment of sensation, etc.).—[From abstract in *Excerpta Medica* **12** (1958) 372.]

PAVLOV, N. F. [Clinical variations of early symptoms of leprosy and methods of their diagnosis.] Sbornik Nauchnykh Rabot po Leprologii i Dermatologii (Rostov) **8** (1956) 73-80 (in Russian).

The author's observation showed that the most frequent early clinical symptoms of leprosy are changes in the color or the surface of a skin area (hypo- or hyper-pigmentation, roseola, erythema, nodules) and impairment of sensation. Other variations are also possible (increase in the number of maculae, their confluence). The article gives methods of the clinical diagnosis of early symptoms of leprosy (study of dermographism, pilomotor reflex, sweat exudation, etc.).—[Abstract from *Excerpta Medica* **12** (1958) 372.]

KOSOLAPKINA, L. I., VARTANOVA, N. G. and NAUMOVA, T. N. [Early diagnosis of leprosy by clinical-laboratory investigations.] Sbornik Nauchnykh Rabot po Leprologii i Dermatologii (Rostov) **8** (1956) 89-93 (in Russian).

In the early diagnosis of leprosy the authors used the functional tests with histamine, morphine, nicotinic acid, mustard plaster, Minor's test and the lepromin test. Bacteriological and histological investigations were also carried out; 70 patients were investigated. It was established that the earliest and most reliable signs of leprosy are spots with loss of sensation in the area. In many cases histological examination showed, at the beginning of the disease, an undifferentiated [or] tuberculoid structure of the infiltrate. Functional tests in cases with suspected leprosy do not always give distinct results.—[Abstract from *Excerpta Medica* **12** (1958) 372.]

CHERNYSHEVA, L. M. [The use of nicotinic acid in the early diagnosis of leprosy.] Sbornik Nauchnykh Rabot po Leprologii i Dermatologii (Rostov) **8** (1956) 94-98 (in Russian).

The effect of nicotinic acid upon 50 persons who were in contact with leprosy patients was studied. Five of them showed a deviation from the usual reaction to nicotinic acid; in 4 of them the test allowed leprosy to be diagnosed with certainty, as confirmed by functional investigations, clinical data, bacteriologic and histologic investigations and subsequent observation.—[From abstract in *Excerpta Medica* **12** (1958) 371.]

LÁTAPI, F. Lepromatosis difusa; aspectos clínicos e histopatológicos. [Diffuse lepromatosis; clinical and histopathologic aspects.] Minerva Dermat. (Turin) **34** (1959) 272-278.

The diffuse lepromatosis described by Lucio and Alvarado (1852) is a special clinical form of lepromatous leprosy, representing the highest degree of nonresistance of the organism to the infection. The "Lucio phenomenon" is the individual cutaneous lesion of lepra reaction in this form of the disease. The multiple necrotizing angiitis, the anatomic substratum of the Lucio phenomenon, is produced by a microbial synergy of the Sanarelli-Shwartzman type. The "Lucio leprosy" should be studied more thoroughly in all its aspects.—[From author's conclusions.]

SOMERSET, E. J. and SEN, N. R. Prognosis of the ocular lesions of leprosy. Leprosy in India **29** (1957) 142-147.

The eyes of 14 nonlepromatous and 11 lepromatous patients were examined in 1946 and again in 1955. In the meantime they had received sulfone treatment for periods varying from 1 to 6 years. Of the nonlepromatous group, 10 had normal eyebrows and lashes at both examinations; of the 4 with hair loss at first, 2 showed regrowth to the normal condition. Lid movement had been normal in 9 cases, and had remained so. The remaining 5 had shown various degrees of lagophthalmos, and, of these, 2 showed some slight improvement in lid movement; but the cornea had remained normal in only 1 case while the other 4 showed the development of exposure keratitis or the exacerbation of previous ulceration or scarring. In 4 of the 11 lepromatous cases, in which there was considerable bacteriologic improvement, decrease in corneal infiltration and disappearance of slight pannus was noted in 1; in another there was no change; and in the other 2 no involvement of the globe had developed. In the remaining 7 cases the general condition as well as the eye condition had deteriorated. One case developed slight bilateral lagophthalmos, and 2 developed superficial punctate keratitis. No less than 5 cases had developed leprous iritis during treatment. Of these, 4 were bilateral; and 3 showed typical "pearls" of leprous iritis. One also developed choroidoretinitis.—N. MUKERJEE

FRUGONI, C. Contributo alla conoscenza delle manifestazioni otorinolaringologiche nel morbo di Hansen. Studio clinica-statistico su 57 lebbrosi Yemeniti. [Otorhinolaryngologic manifestations in leprosy. Clinico-statistical study of 57 cases in the Yemen.] Arch. italiano sci. Med. trop. e Parassit. **39** (1958) 3-40.

This is the report of findings from the point of view of the otorhinolaryngologic specialist in 57 leprosy cases seen in the Yemen, spoken of as one of the oldest foci in the Middle East. A point of interest in mass psychology is that in the Yemen the severe mutilations of leprosy do not give rise to the horror with which they are so often regarded elsewhere, even in neighboring countries. The nose was affected in no less than 50 of the 57 patients. One of the earliest manifestations was a bacillus-positive mucopurulent rhinitis, but a very early lesion was also found in the Valsalva area as a plaque-like, grayish, infiltrated area often surrounded by a corona of dilated vessels. In many cases, it is said, the cause of death is ingestion pneumonia due to pharyngolaryngeal anesthesia following lepromatous infiltration. In 2 cases the ear was affected, there being a purulent otitis positive for bacilli.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1020.]

GHOSH, S. and KUNDU, S. Nasal destruction caused by tuberculoid type of leprosy. Leprosy in India **29** (1957) 163-164.

Report of a case of tuberculoid leprosy with destruction of the nose. The patient developed a macule over the nose and the surrounding region of the face. Six years later an ulcer developed in the nose which progressed in spite of treatment, resulting in its ultimate destruction, with local anesthesia and analgesia. Evidence of syphilitic infection was absent.—N. MUKERJEE

GOKHALE, B. B. and KURKURE, N. B. Phenol red excretion test of kidney function. Indian J. Med. Sci. **12** (1958) 331-333.

Because reactional phenomena may include swelling of lesions on the hands and feet and edema of the eyelids, the authors tested the renal function with phenol red during the reaction phase and compared the results with those obtained during the quiescent stage of the disease. The study was made on 8 patients with lepromatous and 19 with tuberculoid leprosy, and 3 normal persons were included as controls. Phenol red excretion values below 28% in the first 15 minutes were taken as abnormal. They were found to be low in 14 of the 18 patients in the reaction phase, but the other 4 gave normal values. In 5 patients the excretion rate increased during the quiescent phase. In 7 of

those studied during the reaction, the values in the first 15 minutes did not differ materially from those obtained in the second 15 minutes. The values obtained in the patients studied in the quiescent stage were definitely higher than those obtained during the reaction. Thus there was some impairment of kidney function during the reaction phase. The urea, sodium, and potassium values were found to be normal or slightly elevated. The degree of albuminuria had no relation to the degree of impairment in phenol red excretion. The blood pressure was within the normal range in all patients. The edema that appears in some patients in the reaction may thus be due to impaired renal function.—[From Foreign Letters, *J.A.M.A.* **168** (1958) 1797-1798.]

MONTESTRUC, E., BERDONNEAU, R. and BENOIST, J. Réaction tuberculoïde dans la lèpre après administration de B.C.G. [Tuberculoid reaction in leprosy after administration of BCG.] Arch. Inst. Pasteur Martinique **11** (1958) 108-110.

The authors report a case in which BCG vaccination precipitated the appearance of leprosy skin lesions. A child 13 years of age, tuberculin negative, was vaccinated intradermally in May, and a month later showed numerous skin lesions disseminated on the limbs and trunk. The diagnosis of tuberculoid leprosy was made in November, when neural changes were found in the right arm and hand—changes which, it was then learned, had had their beginning before the vaccination. Evidently the vaccination had caused the abrupt explosion of cutaneous lesions, a "tuberculoid reactivation" (not a "tuberculoid reaction"). The authors recall (with references) that BCG was once used for the treatment of leprosy, and promptly abandoned because of reactions evoked. —H. W. W.

DE CAMPOS, E. C. Mutação da forma indiferenciada para tuberculóide sob a ação provável do BCG, em um doente de lepra. [Change from the indeterminate form to tuberculoid under the probable action of BCG in a leprosy patient.] Arq. mineiros Leprol. **18** (1958) 248-252.

The patient presented bacillus-negative anesthetic areas, sections of which revealed only a simple inflammatory infiltration, without bacilli. Sulfone therapy was begun and, at the same time, oral BCG vaccination. Tuberculoid lesions of reactional nature soon appeared in the anesthetic areas; and the lepromin reaction, previously negative, was then 2+ positive.—H. W. W.

NIKULIN, A. [Cancer secondary to leprous lesions of the skin.] Med. Pregl. **10** (1957) 19-22 (in Russian).

A post-mortem study was carried out in a 63-year-old man who had died from leprosy. Under the influence of treatment with chaulmoogra oil, contaben and streptomycin, the leprous lesions had regressed. An epithelioma occupied the dorsal aspect of the left hand, was localized on an old leprous lesion and had given regional metastases in the axilla and in the pectoral region.—[Abstract from *Excerpta Medica* **12** (1958) 499.]

KOSOLAPKEENA, L. I. and SAVEENICH, B. V. K voprosu o chastote zlokachestvennykh novoobrazovanii u bol'nykh leproi. [Frequency of malignant tumors in leprosy.] Voprosy Onkologii (Leningrad) **4** (1958) 90-94.

An analysis of 499 autopsies on lepra patients. There were 38 cases with malignant tumors (7.6%). This rather high incidence is explained by the present therapeutic results in leprosy patients, and thus by their increasing age.—[Abstract from *Excerpta Medica* **12** (1958) 438.]

DREISBACH, J. and COCHRANE, R. G. A study of the effect of Streptohydrazid on lepromatous leprosy over a period of about three years. Leprosy Rev. **29** (1958) 136-142.

The results are given of treatment with Streptohydrazid, 5.6 gm. weekly, for periods ranging from 10 to 40 months. Of the 47 patients treated, 28 were given intramuscular injections of 3 cc. of 50% Sulphetrone, twice weekly, for part of the time. There was much improvement in 16% of the patients on Streptohydrazid alone, and in 33% of those with Sulphetrone added. The combined treatment is recommended for "rapid clearing of nasal and buccal lesions, and for those cases which show intolerance to sulphone therapy." When there is much intolerance, Streptohydrazid may be given alone for the first year after which Sulphetrone can be added. Further trials are planned to determine whether the combined treatment clears up cases more rapidly than DDS or Sulphetrone alone.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1236.]

JOPLING, W. H. and RIDLEY, D. S. 'Vadrine' (S.131) in the treatment of lepromatous leprosy; a preliminary report. Leprosy Rev. **29** (1958) 143-147.

Because of favorable reports on its use in connection with tuberculosis, Vadrine [the *p*-aminosalicylate of 2-pyridyl-(4)-1,3,4-oxidiazolone-(5)] was given a trial in 7 consecutively-admitted cases of leprosy, of which 5 had had no previous treatment. Treatment began with 1 tablet (200 mgm.) daily and increased by 1 tablet every 6 days up to a maximum of 40 mgm./kgm. of body weight; duration of treatment was 12 months in 5 cases and 9 months in 2 cases. The clinical results were better in some and worse in others than those expected from DDS treatment. The biopsy index of bacilli (Ridley's method) had a mean fall during the year of 26%, compared with 25% with sulfones. On the whole, results so far seem to be very similar to those with sulfones, but a longer period of trial is necessary. Apart from anemia in 1 patient, side-effects were absent.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1237.]

SCHALLER, K. F. and SERIE, C. Oxyprocain-Penicillin in der Lepratherapie. [Oxyprocaine penicillin in the therapy of leprosy.] Ztschr. Haut- u. Geschl. Krankh. **25** (1958) 340-344.

Fifteen patients with lepromatous leprosy were treated with oxyprocaine penicillin (adults 400,000 U., children 200,000 U., once daily for 3 to 4 months). Nine became permanently negative for bacilli; in the other 6 their numbers decreased markedly. Definite clinical improvement was achieved in 13 out of the 15 patients. Lepromas subsided as early as after 8 weeks of treatment. No reactivation occurred during up to 2 years of follow-up observation. In 3 patients reactions occurred during treatment, but treatment could be continued when the reaction had subsided. In 4 out of 5 other patients with tuberculoid leprosy the infiltrations subsided 6 to 8 weeks after the start of treatment. Parallel with the bacteriologic and histologic improvement, electrophoresis, Rubino's test and the Middlebrook-Dubos hemagglutination test showed a steady return toward normal. Oxyprocaine penicillin treatment of leprosy equals sulfone treatment but acts more rapidly, and no side effects were observed even in children.—E. KEIL

NICOLAU, ST. G. and VULCAN, P. Über histologische and bakteriologische Veränderungen bei lepromatöser Lepra nach Behandlung mit Diamino-Diphenil-Sulphon (Sulphon-Muttersubstanz). [On the histologic and bacteriologic changes in lepromatous leprosy after treatment with diaminodiphenyl sulfone (parent sulfone).] Arch. klin. u. exper. Dermat. **207** (1958) 486-498.

Of 120 lepromatous cases [in Rumania] treated with DDS for 4½ years, 29 were clinically cured and 4 others were symptom-free but still had isolated bacilli in their lymph nodes. As early as 6 months after the start of treatment, 110 of 115 patients no longer had leprosy bacilli in their nasal mucus; after 3 years of treatment more than one-third were negative in the skin; and after 4½ years bacilli were no longer found in the lymph nodes of 4 out of 25 patients. In the second month of treatment resorption of lepromatous infiltrations in the subcutaneous tissue was observable, and later (begin-

ning after 6-8 months) their replacement by connective tissue. During the reparative phase there was an increase of fibrocytes, lymphocytes, giant cells and collagen fibers. The number of bacilli decreased. Granulated forms took their place, and these underwent decomposition after 2½ to 3 years of treatment. The disappearance of all decomposition forms of leprosy bacilli is regarded as the most reliable test of cure.—E. KEIL

CONSIGLI, C. A., BIAGGINI, R. and VASQUEZ, C. El tratamiento de la reacción leprosa con prednisona. [Treatment of lepra reaction with prednisone.] Leprología (Buenos Aires) **3** (1958) 16-20.

In all cases the immediate results of prednisone treatment of lepra reaction were very good, and sometimes spectacular, with disappearance of the fever and somewhat less rapid subsidence of reactional skin lesions, bone and joint pains, adenitis and neuritis. When treatment was suspended early (after 8-10 days), relapses were frequent but in no case with increased severity. No relapses occurred under long-term maintenance dosage of 1 to 2 tablets daily. Maximum daily dosage, 6 tablets; maximum total dose, over 200 tablets (1,000 mgm.) in 5 months. In 2 cases simultaneous oral administration of BCG in 200 mgm. weekly doses gave very good results, although 6 months previously 1 of them (who had had successive reactions for about 2 years) had been given BCG in increased doses without appreciable benefit. In almost all of the cases it was possible to resume specific treatment, continuing the prednisone for a time, whereas previously without prednisone resumption of treatment had immediately precipitated further reactions. No signs of intolerance or side effects attributable to the medication were seen. Because of the ease of handling as compared with cortisone and hydrocortisone, strict supervision of the patients is not necessary.—[From authors' conclusions, supplied by G. Basombrio.]

[EAST AFRICAN/BRITISH MEDICAL RESEARCH COUNCIL SULPHONE INVESTIGATION.] Comparative trial of isoniazid in combination with sulphone or PAS in the treatment of acute pulmonary tuberculosis in East Africans. Tubercle **40** (1959) 1-13.

This study was a comparison of DDS and PAS as additives to be given with INH for the purpose of preventing the emergence of isoniazid resistance on the part of the causative tubercle bacilli. DDS was found to be ineffective in that respect. Despite that bacteriologic failure, however, the DDS-INH combination was clinically only slightly inferior to the PAS-INH combination.—H. W. W.

MAYAMA, A. Ultracentrifugal studies of serum lipoproteins in leprosy. La Lepro **27** (1958) 233-241 (in Japanese; English abstract).

Ultracentrifuge determinations of serum lipoproteins were carried out in 16 subjects, 13 uncomplicated leprosy cases and 3 normals. After increasing the density of the serum to 1.063 with sodium chloride, it was spun at 40,000 rpm in a Hitachi preparatory ultracentrifuge at —5°C, and 1 cc. of the top fraction (flotation layer) was removed. Paper electrophoresis showed that this fraction consisted of a large amount of β lipoprotein and a small amount of α_2 lipoprotein. Next, 0.3 cc. of the fraction was diluted four-fold for analytic ultracentrifugation at a rotor speed of 59,520-59,840 rpm in a Spinco Model E ultracentrifuge. The serum of the maculoanesthetic case tested showed a lipoprotein of the S_f 11.4 class. (1 S_f = 1 Svedberg unit of flotation = 10^{-13} cm/sec/-dyne/g) and a molecular weight of about 395,000. No significant difference was found between the serum lipoprotein of the maculoanesthetic patient and that of the healthy subjects. The serum lipoprotein S_f of minor tuberculoid leprosy (5 cases) was in the 9.2-11.1 class, with a mean of 10.3 and a calculated molecular weight of about 330,000. Differing from these findings were those of sera of nodular lepromatous leprosy (7 cases), the lipoprotein of which was made up of several flotation classes showing a wide variation of

S_f, from 3.4 to 13.7. The mean was 6.6, the calculated molecular weight being close to 173,000.—[From abstract.]

KUSAKA, T. Alterations in the lipid content of the blood and tissues in leprosy patients. La Lepro **27** (1958) 228-232 (in Japanese; English abstract).

The total lipid, cholesterol and phosphatid contents of the upper leg muscle, cervical lymph node, and sciatic nerve of leprosy cases have been measured, the values being compared with those of normal controls (accidental deaths). The levels in the sera of leprosy patients were also measured. The serum cholesterol in leprosy is less than in the normal individual, but there are no differences in the total lipid and phosphatid levels. The cholesterol/total lipid, phosphatid/total lipid and cholesterol/phosphatid ratios, however, are lower than normal. The former two, moreover, are not altered by long-term administration of liver-protecting agents and can be assumed to be due to leprosy itself, whereas the latter shows a rise on recovery of normal liver function showing that it is a secondary phenomenon. These findings suggest that a general metabolic disturbance takes place in leprosy. (The marked changes in lipid content of the tissues and organs in murine leprosy have previously been reported.)—[From abstract.]

SUGAI, K. Histopathological studies on human leprosy (IV). Histochemical analysis of abnormal fats in leprous lesions, especially on the fat deposition in lymphnodes. La Lepro **27** (1958) 215-227 (in Japanese; English abstract).

Histochemical studies of the fat content of lesions of the skin, nerves and lymph nodes in leprosy led to the following results. The fat in lepra cells is chiefly phospholipid (lecithin) and fatty acids, and this coincides with the fat contained in leprosy bacilli. Foam cells contain a small amount of neutral fat (glycerol) besides the fatty acids, and at times sterol is found, but this can be interpreted as a process of cell degeneration. Although the lesions in the skin and nerves may be absorbed and disappear, the fat deposition in the lymph nodes remains. The fat in old lesions in the lymph nodes contains considerable quantities of glycerol and cholesterol (ester form), besides a large amount of phospholipid (lecithin) and fatty acid. At times cholesterol is not found. Chaulmoogra oil reacts to Nile red and shows a phytosterin reaction, which coincides with the properties characteristic of the fats of old lymph nodes. If chaulmoogra has been used therapeutically, it is present in the fat deposition in the lymph nodes besides the so-called lipoid substances mentioned. The lymphatic reticulosis arising from invasion by leprosy bacilli appears to aid deposition of fat transported from the periphery. The giant vacuoles observed in the lymph nodes of chaulmoogra-treated neural cases is believed to arise from saponification of the oil. [Findings in the pathologic fat in xanthoma and suppurative lipoid pneumonia, and in the myelin sheath of peripheral nerves, are also given.]—[From abstract.]

PEPLER, W. J., LOUBSER, E. and KOOIJ, R. A histochemical study of some of the hydrolytic enzymes in leprosy. Dermatologica (Basel) **117** (1958) 468-477.

Histochemical studies were carried out on biopsy specimens from patients with typical lepromatous or tuberculoid leprosy, in order to determine the various enzymes present, i.e., nonspecific esterase, acid and alkaline phosphatase, sulfatase, and lipids. The most important finding was that much more acid phosphatase is present in lepromatous than in tuberculoid leprosy. Since more acid phosphatase was found in Virchow's cells than in epithelioid and giant cells, this enzyme may perhaps be of some importance in connection with lipid metabolism in the leprosy bacillus, as is the case with the tubercle bacillus. Nonspecific esterase was traced in all three types of cells, whereas alkaline phosphatase was found only in the capillary walls. Sulfatase was present in the infiltrations in both forms of leprosy. Neutral fat was encountred in Virchow's cells in every case of lepromatous leprosy, as well as in a few epithelioid cells of

tuberculoid cases. No phospholipids were ever found.—[From abstract in *Lit. Rev.* (Ciba) **4** (1959) 11.]

GOKHALE, B. B. Histamine in the blood in leprosy. Leprosy Rev. **29** (1958) 155-157.

Using a microchemical method, the author compared the amount of histamine in 78 nonleprosy subjects and in 68 leprosy patients (21 lepromatous, 30 tuberculoid, and 17 of other types). The means, in micrograms per 100 cc. of blood, were 4.84 for the nonleprosy subjects and 7.01 for the leprosy patients. In lepromatous patients it averaged 6.94, and in tuberculoid patients it was 7.99, a figure which is highly significant. The question is raised as to whether there may be some connection between this high content of histamine in tuberculoid leprosy and the lepromin positivity which is characteristic of the tuberculoid type.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1232.]

BERGEL, M. Comportamiento histoquimico del granuloma lepromatosa y de la grasa amarilla frente al azul de metileno. [Histochemical behavior of the lepromatous granuloma and yellow fat with methylene blue.] Leprología (Buenos Aires) **3** (1958) 21-25.

Methylene blue stains strongly, *in vivo* and *in vitro*, the lepromatous and yellow-fat tissues, but not other normal ones. An explanation of these facts is offered.—[From author's summary, supplied by G. Basombrio.]

DE ANDRADE, L. C. and DE FREITAS, U. O. tecido conjuntivo sub-epitelial na lepra tuberculoide. [The subepithelial connective tissue in tuberculoid leprosy.] Bol. Serv. Nac. Lep. (Brazil) **17** (1958) 309-322.

The so-called "Unna's band" of subepithelial connective tissue in lepromatous leprosy is principally a result of a phenomenon of histologic adaptation. The diffuse character of the infiltrate and the condition of anergy of the terrain contribute principally to the formation of this band. In 15 to 18 per cent of tuberculoid cases there is an analogous disposition of the subepithelial connective tissue, which is considered a "pattern of the Unna band." When in tuberculoid leprosy the infiltration is clearly confluent or tends to confluence, the appearance of the band, or the pattern of the band, becomes more likely. In some "dimorphous" cases can be seen a transition of the subepithelial tissue between the two poles, which in its pathomorphologic aspect may be accompanied by the phenomenon of histologic adaptation. The superficial elastic network in tuberculoid leprosy, contrary to what is seen in the deeper levels of the dermis, shows no evident changes. In the various forms of leprosy the subepithelial reticulum of Mall is sparse in some cases or has disappeared in others. This can be explained by a probable induction action which rapidly transforms the precollagen into collagen during the development of the histologic adaptation. The subepithelial mucopolysaccharide layer behaves similarly in both forms of leprosy, appearing either normal, or fragmented, or diffuse and vague. The phenomena of rapid and reversible polymerization and depolymerization explain the frequency with which is seen the relative integrity of this mucopolysaccharide layer at the level of the subepithelial infiltrates. The mucopolysaccharide layer and the so-called "diffusion factors" deserve more detailed study. In summary, there are marked analogies between the so-called "band of Unna" of lepromatous leprosy and the pattern of certain structures of the subepithelial connection tissue in the tuberculoid form. The picture of Unna's band is only an expression of a histologic adaptation or accommodation, the absence of which in most cases of other forms than the lepromatous can be explained by the difference of the antigen-antibody reaction of the damaged tissue.—[From authors' conclusions. Six small photomicrographs in color.]

MUKERJEE, N. and GHOSAL, P. Study of cutaneous nerve in leprosy by acid phosphatase method. Leprosy in India **29** (1957) 3-13.

Skin specimens from 29 tuberculoid and 58 lepromatous cases, and also 8 normal individuals, were examined for nerves by a slightly modified Gomori technique for the detection of acid phosphatase. The location of the bacilli in the affected nerves was studied by superstaining the sections by the Ziehl-Neelsen method. The frequency of finding cutaneous nerves in the specimens from the leprosy cases depended on the type, duration, and thickness of the lesion. Pathologic nerve changes in tuberculoid lesions probably start with perineural infiltration in the finer nerves near the epidermis. The compact perineural infiltration penetrates into the thicker nerve and brings about fragmentation of fibers, which leads to Wallerian degeneration. In lepromatous lesions the changes possibly start with loose perineural infiltration of the thicker nerves in the deeper zone of the dermis. This infiltration does not penetrate into the nerve, and there is no fragmentation of fibers. The degeneration of fibers that was encountered in such cases appeared to be of parenchymatous nature and possibly of toxic origin. Bacilli were located mainly in the interfiber spaces, but in the lepromatous lesions they were occasionally encountered in the different parts of a nerve fiber, such as the myelin sheath, Schwann sheath, Schwann cell, and faintly stained axon.—Authors' Abstract

Ranadive, K. J., Nerurkar, R. V. and Khanolkar, V. R. In vitro studies on human leprosy. I. Indian J. Med. Sci. **12** (1958) 791-796.

Involvement of peripheral nerves and ganglion cells of somatic and autonomic origin appears to be the most consistent feature of leprosy as revealed by histologic study, the causative organisms exhibiting a particular disposition to migrate towards the sensory and sympathetic nerve fibers. To explore this phenomenon the authors set up a series of tissue cultures and studied the *in vitro* response of human fetal spinal ganglia and skeletal muscle to *M. leprae*, with adequate controls. The human fetal tissue, 10-20 weeks of age, was grown in solid plasma-clot cultures in association with fragments of fresh lepromatous tissue. The cultures were stained for bacilli 72-96 hours after explantation of the lepromatous tissue. Of the spinal ganglion cultures, 78% showed fibrocytes containing acid-fast material in some form, but only 7% of the cultures of skeletal muscle showed acid-fast material in the fibrocytes. None of the control cultures of skeletal muscle showed such material in the fibrocytes in 7% showed faint acid-fast granules. Thus human lepra bacilli were attracted towards the spinal ganglion cultures and were then taken up by the fibrocytes. The nature of the granules in the control spinal ganglion cultures could not be determined. The spinal ganglion fibrocytes displayed strong phagocytic activity for the bacilli which was not observed in the fibrocytes of skeletal muscle.—[From Foreign Letters, *J. American Med. Assoc.* **169** (1959) 273.]

Weiner, M. A. Leprosy; report of a case with a rare histopathological feature. A.M.A. Arch. Dermat. **79** (1959) 709-711.

In a patient with the dimorphous (borderline) type of leprosy a rare histopathologic feature was the presence of *Mycobacterium leprae* within intact and desquamating epidermal cells. It is suggested that this type of "open case," even without cutaneous or mucosal ulceration, may be an unsuspected source of dissemination of bacilli.—[From author's summary.]

Yanagisawa, K., Asami, N., Maeda, M. and Ishihara, S. Prophylaxis of leprosy with dried BCG vaccine (II). La Lepro **27** (1958) 242-247 (in Japanese; English abstract).

Normal school children 6-8 years of age, with negative lepromin and tuberculin reactions, were inoculated with dried BCG vaccine by the intracutaneous method or by scarification and the reactions were tested after 8-11 weeks and 1 year. Regardless of the method of inoculation, the lepromin reaction was 71-73% positive and the tuberculin reaction 83-84% positive after 1 year. A considerably high correlation was maintained

between the size of the erythema induced by both tests at all stages following inoculation of BCG. After injection of 0.1% lactate solution as a placebo instead of BCG, there were obtained 47% positive reactions to lepromin and 51% to tuberculin after 1 year. It is suggested that it is due to the fact that both the reactions to both lepromin and tuberculin are allergy reactions.—[From abstract.] [There are indications that the Dharmendra antigen was used in this work, and it is evident that the reaction read was the early one.—EDITOR.]

GOULDING, R. BCG vaccination and experimental corneal tuberculosis in the mouse. Tubercle **38** (1957) 175-181.

In one phase of the work here reported it was found that, whereas viable BCG dilutions injected intravenously in mice conveyed some degree of immunity demonstrable by the corneal infection test used, it was found that heat-killed BCG similarly injected did not do so. Perhaps the production of immunity by living vaccine organisms depends upon the cellular changes in the host to which they give rise, for the heat-killed BCG caused no host reactions. [Food for thought in connection with the question of whether or not the lepromin positivity induced in children by the intradermal injection of lepromin signifies also the relative immunity to leprosy infection which BCG vaccination is supposed to convey. However, the *intradermal* injection of heat-killed leprosy bacilli does cause a host reaction]—H. W. W.

OLMOS CASTRO, N., ARCURI, P. B. and TORANZOS, L. B. La reacción lepromínica en convivientes de leprosos. [The lepromin reaction in contacts of leprosy patients.] Leprología (Buenos Aires) **3** (1958) 11-15.

The authors compare the frequencies of the reactions of hypersensitivity (Fernandez) and of resistance (Mitsuda) to lepromin in contacts of lepromatous and of tuberculoid cases. The frequencies of both reactions increase progressively with age. Of 756 contacts (total), 41% showed the early reaction; of 368 contacts (total), 70% showed the late reaction. Comparing the results in three age groups (0-4, 5-9, and 10-14 years), there were appreciable differences with reference to the type of case with which they were in contact (lepromatous or tuberculoid) in the percentages of early reactions, but not of late reactions. In any event there is a marked predominance of individuals giving the late reaction. It is concluded that in contacts the Fernandez reaction is of significant value, and that it is more accurate in proving hypersensitization than is the Mitsuda reaction in proving resistance (resistance which has been provoked by the infective focus).—[From authors' summary, supplied by G. Basombrio.]

KOOIJ, R. and GERRITSEN, TH. On the nature of the Mitsuda and the Kveim reaction. Dermatologica (Basel) **116** (1958) 1-27.

Positive late (Mitsuda) "lepromin" reactions were obtained with suspensions of normal skin and liver particles in patients with tuberculoid leprosy, but not in lepromatous patients. These reactions to preparations of normal tissue are similar to those obtained with lepromin containing leprosy bacilli. Filtrates of lepromin and of normal tissue preparations do not evoke the positive reaction in tuberculoid cases. There is evidence that in the Mitsuda reaction we are dealing with a sarcoid (tuberculoid) type of foreign-body reaction or an isomorphic phenomenon. The Kveim antigen does not contain a specific substance, and the reaction produced is similar to that of a saline tissue extract. Positive reactions were obtained in tuberculoid leprosy cases with the Kveim antigen. It is concluded that the Mitsuda and Kveim reactions are of similar nature. The Kveim reaction is an expression of a sarcoid mode of reaction in certain individuals, and the disease sarcoidosis is a syndrome which can be evoked by many agents.—[From the authors' summary.]

[In some of the experiments reported, suspensions of particles from normal liver made by the Dharmendra method were used. Neither in this article nor in the authors' previous one in THE JOURNAL [**24** (1956) 171-181] is there any explanation of the nature of those particles, or of how tissue particles are obtained by the Dharmendra method. In preparing Dharmendra's antigen chloroform is used to extract the leprosy bacilli from the tissue elements of the leproma, which are discarded. The final ether preparation, before centrifuging, is supposed to contain only bacilli suspended in the ether solution of the lipids left after evaporation of the chloroform.—EDITOR.]

DAVEY, T. F. and DREWETT, S. E. Lepromin-like activity of normal skin tissue. Leprosy Rev. **29** (1958) 197-203.

The material used in this investigation of the reported lepromin-like activity of antigens prepared from normal skin (Kooij and Gerritsen) was prepared according to Wade's modification of the Mitsuda method. The 50 patients tested were 10 lepromatous, 10 borderline, 10 major tuberculoid, 17 minor tuberculoid, and 3 indeterminate. For the control injections both standard and refined lepromin (Lowe's modification of the Dharmendra antigen) were employed, with carbol saline as an extra control. Each patient was injected simultaneously with all 4 preparations, and the early and late reactions were read. The normal skin preparation did not induce the early reaction, but in tuberculoid leprosy—not in lepromatous leprosy—it induced Mitsuda reactions indistinguishable from those produced by the ordinary lepromin although they were smaller in degree, and slightly smaller than those produced by the refined antigen. It is concluded that, with respect to the Mitsuda reaction, it is questionable whether the refined lepromin has any advantage over the normal skin preparation. It remains to be seen if these results may be due to contamination with unsuspected antigens. Kooij and Gerritsen's findings are at least partly confirmed, but more experiments with the skin preparation used are required, including histologic controls.—[From abstract in *Trop. Dis. Bull.* **56** (1959) 450.]

[The following data are taken from a table in the original article pertaining to the late reactions. The "3 mm." column includes all reactions of that size or larger; the "7 mm." column is of reactions larger than that size.

Type (No. of cases)	*Standard lepromin*		*Lowe antigen*		*Skin preparation*	
	3 mm.	*7 mm.*	*3 mm.*	*7 mm.*	*3 mm.*	*7 mm.*
Lepromatous (10)	0	—	0	—	0	—
Indeterminate (3)	3	2	0	—	0	—
Borderline (10	10	3	6	0	2	0
Minor T (17)	17	16	13	5	13	0
Major T (10)	10	10	10	3	10	3

[Thus, in the 27 tuberculoid cases the standard lepromin gave positive results in all, and strong reactions in all but one (a minor case), while the two other antigens were both negative in 4 cases (all minor); but, with the former, 8 cases (5 of them minor) gave strong reactions, against only 3 (all major) for the latter. The average sizes of the reaction lesions in the 27 tuberculoid cases were: with the standard lepromin, 14.4 mm.; with the Lowe antigen, only 6.6 mm.; and with the skin preparation, 5.0 mm. With all antigens the reaction lesions in the major tuberculoid group averaged larger than in the minor tuberculoid group, a comparison which is of considerable interest.

[It is to be noted that all subjects were leprosy patients, with no normal healthy control group; and that all subjects received the full battery of injections, none the normal skin preparation alone.—EDITOR.]

OLMOS CASTRO, N. and ARCURI, P. B. Los resultados de la inyección de suspensión de piel sana en sensibilizados por lepromina integral. [Results of injection with healthy skin suspension in persons sensitized by integral lepromin.] Leprología (Buenos Aires) **3** (1958) 26-29.

A group of 19 healthy male adults, supposedly without contact with leprosy, were sensitized by 2 injections of the Mitsuda-Hayashi integral lepromin. Subsequently they gave negative reactions 48 hours after the intradermal injection of protein extracts of normal skin, and the results were also negative 48 hours and 21 days after the injection of a suspension of a tissue extract of normal skin. It is concluded that the Wade phenomenon is of specific nature, and that it is provoked by the leprosy bacillus.—[From authors' summary, supplied by G. Basombrio.]

MONTESTRUC, E. Évolution de l'intradermo-réaction léprominique au cours de la vaccination par le B.C.G. [Evolution of the lepromin reaction in the course of BCG vaccination.] Bull. Soc. Path. exot. **51** (1958) 472-473.

A young native employee, although tuberculin positive, gave negative results to lepromin tests made in February and July, and he was thereupon vaccinated intradermally with BCG. Two weeks later the site of the second lepromin injection (made 46 days previously) showed a 6 mm. Mitsuda reaction, proving that the vaccination had established a state of paraimmunity which the previous tuberculosis infection had been insufficient to do. The author tells of his practice of vaccinating with BCG, contacts of leprosy patients who are tuberculin positive if they are nonreactive to lepromin, and he says that such vaccinations are without noteworthy incidents. [Signifying, presumably, lack of reactions of the Koch type. Nothing is said of the dose of tuberculin used to elicit sensitivity, which information might indicate whether it was of specific or nonspecific nature. It has been said that persons with the nonspecific reactivity do not give Koch reactions when injected intradermally with BCG.]—H. W. W.

SATO, S., FUKUDA, M., KAMIKAWA, Y., MAJIMA, S., ABE, H. and TAKEDA, M. Relationship between the sizes of the brownish red spot and infiltrated area at the site of inoculation in the late lepromin reaction; observation in some 1,400 leprosy patients. Sci. Rep. Res. Inst. Tohoku Univ. **8** (1958) 83-90.

Comparing the brownish-red spot at the 14th day after injection of lepromin with the infiltration [nodulation] currently used in reading reactions, there was coincidence in almost all of some 1,000 lepromatous cases but divergencies in both directions in certain proportions of 350 nonlepromatous cases. However, using the 7-mm. criterion which the same authors had previously recommended, the results of the spot method could be applied in classification as well as those of the infiltration method.—[From authors' summary.]

FUKUDA, M. Contribution to the study of the lepromin reaction, rescrutinizing of the method and the time for reading of the late reaction. La Lepro **27** (1958) 248-262 (in Japanese; English abstract).

The value of the brownish-red spot appearing together with the nodular infiltration at the site of injection in the late lepromin reactions, using the Mitsuda or the Dharmendra antigen, with respect to the problem of the time for reading has been scrutinized. The so-called spot and infiltration methods were compared in 185 leprosy cases. In the lepromatous cases the sizes of both changes coincided quite well, whereas in the nonlepromatous cases the spot was usually larger than the infiltration. The results confirm

our criterion of more than 7 mm. for positivity as appropriate for type classification. Also in nonleprous subjects (25 adults, 1,227 schoolchildren) the spot was larger than the infiltration in many cases, notably in tuberculin positives and especially in cases of pulmonary tuberculosis. The histology of the spot lesion in the nonlepromatous cases was similar to that of the nodular infiltration, with minute foci of tuberculoid structure. The findings were similar in the positive reaction sites of lepromatous cases. The spot method seems to be better than the infiltration method because of high objectivity of the spot for accurate measurement. The early reactions using both antigens can undoubtedly be employed for classification, with the criterion of more than 10 mm. after 48 hours for positivity. The maximum size of the infiltration was most commonly seen on the 22nd and 29th days after injection, and of the spot method on the 8th and 15th days. However, reading the infiltration at any time between the 15th and 29th days, and the spot between the 8th and 29th days, is appropriate for type classification. [Further details.]—[From abstract.] [The article contains eight tables the headings and data of which are as they would be in an English-language publication.—Editor.]

Zarco, R. M. and Chan, V. The Kahn, VDRL, and complement fixation tests for syphilis on sera of lepers. J. Philippine Med. Assoc. **34** (1958) 205-212.

Three serologic tests for syphilis were performed on the sera of 108 leprosarium patients, namely, the Kahn standard test using the lipoidal antigen, the VDRL slide flocculation test, and the complement-fixation test of the New York State Department of Health. The sera from 4 cases were reactive to the complement-fixation test; 57 cases with the Kahn test, and 29 cases with the VDRL test. All sera reactive with the complement-fixation test were likewise reactive with the Kahn and VDRL tests. The low incidence of reactivity with the complement-fixation test, together with the close agreement of these results with TPI test, showed the high specificity of this serologic test for syphilis among leprosy patients, in contrast with high percentages of false positive reactions with the Kahn and VDRL tests.—[From authors' summary.]

Breña, G. and Malacara, M. Estudios serológicos en enfermos de lepra. [Serologic studies in leprosy patients.] Dermatología (Mexico) **2** (1958) 56-66.

The sera of 82 leprosy patients were tested with four standard syphilis tests (Wassermann, Kolmer with Kahn cardiolipin antigen, Mazzini in plaque with lipoid antigen, and VDRL in plaque), and with the complement-fixation reaction with the Reiter protein. The results obtained showed that positivity for R.S.S. is a frequent phenomenon which is equal in both sexes, greatest in but not exclusive to lepromatous leprosy, of less intensity than in syphilis, and different in degree in each serologic technique. The percentage of positivity has no connection with the duration of the disease, but is directly related to the acceleration of erythrocyte sedimentation. Sulfone treatment has no well-defined effect on positivity, but suggestively it seems that it increases with time.—Authors' Abstract

Collier, W. A. and Bueno De Mesquita, S. J. Syphilis tests in leprosy patients. Trop. & Geograph. Med. **10** (1958) 46-50.

The results of the Wassermann, Kahn and Meinicke tests on sera of patients with various forms of leprosy are compared with the results with the so-called leprosy complement-fixation test with a tuberculosis antigen [The Journal **26** (1958) 91]. The sera of lepromatous cases tended to give more positive syphilis reactions than those of tuberculoid cases; also, active lepromatous cases more than quiescent or arrested ones. In general the sera which gave positive results with the leprosy complement-fixation test were also positive with the syphilis tests, and *vice versa*. Nevertheless, the positive leprosy and syphilis tests are independent of each other; antibodies to leprosy are formed independently of the activity of the pathological process, whereas antibodies which react

with syphilis antigens depend on that activity.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1233.]

COLLIER, W. A., BUENO DE MESQUITA, S. J. and VAN ZANTEN, E. Quantitative cold complement fixation by blood sera of leprosy patients. Trop. & Geograph. Med. **10** (1958) 171-174.

These authors carried out complement-fixation tests with a tuberculosis antigen on 372 sera from leprosy patients of various types, contacts, nursing staff, normal persons and tuberculosis patients. The study was of the differences in parallel tests done at 37° and 4°C. In the cold test the titers tended to be higher in the sera (28) from lepromatous cases, 14% of which were negative at 4°C. as against none at 37°C. The greatest differences in titers were in the contacts group (24), in which titers of 1/160 were obtained at 4°C. compared with 1/5 at 37°C. Sera from normal persons (50) showed little difference at the two temperatures. This suggests that there may be a special significance to be attached to the two forms of the test.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1336.]

MUFTIC, M. K. Investigation of resistance of mycobacteria to decolorization. Tubercle **40** (1959) 50-53.

Suspensions of the H37Rv tubercle bacillus were exposed to various detergents until they lost their resistance to decolorization (or for 48 hours if resistance was not lost). Two different staining methods were used, the Ziehl-Neelsen and a cyanin one. Resistance in the former method was lost much sooner than in the latter, and it is concluded that resistance depends on different factors in these two methods—mycolic acid in Ziehl-Neelsen, and other lipids in the other after the mycolic acid has been extracted. A study was made of restoration of the "decolorization factor" by exposing the extracted bacilli to mycolic acid. This was found to be possible provided the extraction treatment had not removed all of the lipids, in which case they could not fix the mycolic acid. [The dyes used in the cyanin method, being insoluble in water, were used 5% in dioxane. A question arises whether or not dioxane has a "restorative" effect on lipid-extracted bacilli.]—H. W. W.

STEIN, A. A. and TUTKEVITCH, L. M. [New method of detection of leprosy bacilli in circulating blood.] Sovremenny Voprosy Dermatologii (Kiev) (1957) 184-186 (in Russian).

In order to detect leprosy bacilli in the circulating blood the authors prepared a "large drop" of the patient's blood diluted with distilled water and stained by Pooman's method, without previous fixation. The preparations were stained with carbol fuchsin and counterstained with methylene blue. In addition blood smears were made from a vein, and also as a control smears from the tissue juice of the skin in the ulnar flexure; single bacilli were observed in the former, but not in the latter. By the large drop method bacilli were detected in 115 out of 226 specimens prepared from the blood of 59 patients with lepromatous (nodular) leprosy (50.8%). These results are regarded as testifying to the presence of bacteremia in leprosy patients.—[From abstract in *Excerpta Medica* **12** (1958) 371.]

WALLACE, J. H. Leukocytic transfer of delayed sensitivity to normal guinea pigs from rats infected with *Mycobacterium lepraemurium*. J. Immunol. **80** (1958) 362-366.

Leucocytes from rats infected with murine leprosy have been found capable of passively transferring hypersensitivity to normal guinea-pigs. The donor rats were inoculated intraperitoneally 6 hours after birth, and again, subcutaneously, 1 month later. The leucocytes were obtained from the peritoneal cavity 2 days after the injection

of light mineral oil, and were transferred to normal guinea-pigs either by intradermal or intracardial injection. The test antigens were 1:5 OT, a 3% homogenate of peritoneal lepromas from mice (MLM), and a suspension of normal mouse (peritoneal) tissue (NMT). These antigens were injected along with the leucocytes when the cells were injected intradermally, and separately when they were injected intracardially. Spleen homogenates of the donor rats were also transferred to guinea-pigs, intraperitoneally, but in this case the testing with the antigens was delayed for 48 hours. The reactions were read after 24 and 48 hours. Following the intracardial injection of the cells, reactions were produced only by the MLM antigen; these reactions were, however, small, being only about 5 mm^2. Injection of the antigen with the cells did not, however, increase the size of the reaction, whereas the reactions from the cells of leprotic rats were much larger when they were injected with OT and NMT antigens; the sizes of these reactions ranged from 79 to 254 mm^2, and they differed from those observed after systemic injection, for those from OT tended to exceed those from MLM. Heating the cells for 30 minutes at 50°C. abolished their specific reactivity.—[From abstract in *Trop. Dis. Bull.* **56** (1959) 306.]

SUSHIDA, K. and YAMADA, N. Immunological studies on murine leprosy. II. Relation between resistance to infection of mice immunized with killed murine leprosy bacilli and the serum protein fraction pattern. La Lepro **27** (1958) 263-270 (in Japanese; English abstract).

Heat-killed murine leprosy bacillus vaccines were prepared with olive oil or liquid paraffin, and mice were immunized with these vaccines, and also with a vaccine containing no adjuvant. The resistance to murine leprosy infection was tested, and the serum-protein and glycoprotein fractions of the sera were examined by paper electrophoresis. The results showed that the olive-oil vaccine has a fairly strong preventive effect, and that the liquid-paraffin vaccine also has an inhibitory effect. The vaccine without adjuvant showed a little suppression compared with unvaccinated controls. All three vaccines caused increases in $\alpha 2$ globulin and β globulin, the increase being highest after the olive-oil vaccine, which had the greatest preventive effect, followed by the liquid-paraffin vaccine; the findings after the simple vaccine were close to those in normals. No significant changes were found in the serum glycoprotein fractions after any of the vaccines. The α globulin and β globulin showed a tendency to increase after the challenge with murine leprosy bacilli.—[From abstract.]

CHANG, Y. T. Effects of kanamycin, streptovaricin, paromomycin, novobiocin, and ristocetin on murine leprosy. American Rev. Tuberc. & Pulmon. Dis. **79** (1959) 673-676.

This report deals with the effects of the five antibiotics listed in the title on murine leprosy of the mouse, using the writer's technique of three-month chemotherapeutic assay with intraperitoneally-infected mice. A three-week chemotherapeutic assay was also employed. Standards used were streptomycin, isoniazid and DDS. Treatment was commenced on the day after the inoculation. Kanamycin, streptovaricin and paromomycin possessed suppressive activity in both the three-week and three-month experiments. Novobiocin and ristocetin showed no activity.—SR. HILARY ROSS

BRODHAGE, H. 'Vadrine' (S.131) assessed bacteriologically in the treatment of experimental murine leprosy. Leprosy Rev. **29** (1958) 148-154.

Three groups of 15 rats each were injected intratesticularly with a suspension of living rat leprosy bacilli, and another group of 15 with a suspension of heat-treated bacilli. One group of each lot received food with 0.2% DDS added, beginning 21 days after the inoculation. With another group 1% Vadrine was similarly added. The third group served as controls. The efficiency of the tested substance was judged after a year

by the size of the testis and spleen, and by the bacterial index of tissue suspension of lung, liver and spleen.

$$\frac{\text{No. of bacilli per cc. testis homogenate control group}}{\text{No. of bacilli per cc. testis homogenate test groups}}$$

of the control group of rats, infected with living bacilli but untreated, as zero, the ratio of the DDS-treated group was 65 and that of the Vadrine-treated group was 800, showing that both substances have a therapeutic effect, but that Vadrine is more efficient than DDS. The test results obtained in animals infected with bacilli treated with heat gave a ratio of 578, this giving rise to the suspicion that the technique for heat treatment (5 mins. at 100°C.) was incorrect or insufficient.—[From abstract in *Trop. Dis. Bull.* **55** (1958) 1237.]

TODA, T., MORI, R. and TOKUNAGA, T. Studies on the chemotherapy of leprosy. I. Prevention of murine leprosy infection by 3-amino-4-hydroxybenzoic acid hydrazide and ω-anilino-undecanoic acid. La Lepro **27** (1958) 271-274 (in Japanese; English abstract).

It having been found that 3-amino-4-hydroxybenzoic acid hydrazide (ABH) and ω-anilino-undecanoic acid have some effects on the tubercle bacilli and are effective in experimental tuberculosis in mice, the effects of these agents in the prevention of murine leprosy have been investigated. It was found that ABH has some infection-suppressing action. Application of this agent in human leprosy is being studied.—[From abstract.]

CHAO, Y. Treatment of murine leprosy with a light sensitive dye neo-cyancor 12. La Lepro **27** (1958) 275-282 (in Japanese; English abstract).

Mice inoculated with the murine leprosy bacillus were treated with a light sensitive dye, Neocyancor 12. Short-term treatment showed a suppressive effect on leproma development, but long-term treatment had an enhancing effect, as shown by excision and accurate measurement of the lepromas. Histologic examination of the lepromas by fluorescence microscopy showed that the form of many of the bacilli in the treated group was altered, and that disrupted forms increased parallel with treatment. This shows that there was no relationship between the therapeutic progress and appearance of abnormal forms. There was no significant difference between the treated and control groups in the numbers of bacilli present in the lepromas.—[From abstract.]