

## CURRENT LITERATURE

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

[ANON.] Leprosy; a survey of recent legislation. *Internat. Dig. Health Legisl.* 5 (1954) 3-36. Reprinted by WHO, Geneva, 1954; 1/9, \$0.25, Sw. fr. 1.

This is a comparative study of leprosy-control legislation. The recommendations of the international leprosy conferences and of the WHO Expert Committee on Leprosy have aimed at humanizing the existing practices for dealing with leprosy patients while still providing for the best possible protection for the health of the community. The laws dealt with in this study are drawn from 30 countries since 1940. The subject is discussed under the following headings: detection; measures relating to leprosy, such as isolation, discharge, trades and marriage; measures relating to household contacts; and miscellaneous such as rehabilitation, dispensaries and leprosaria regulations. Laws applicable to the patient himself and to his contacts are the most important, and those which are found to vary the most are the measures in force in the different countries with respect to isolation and release. The prompt discharge of arrested cases is recommended as an inducement for other patients to come forward for treatment. The medical criteria for release vary markedly from country to country. Household contacts, particularly infants and children, are very important. Provision is usually made in leprosy-control laws for the isolation of infants at birth, and for children, removal to foster homes or to a preventorium. It is felt that by the survey made it is impossible to frame a uniform program for leprosy control for the whole world. Those interested should obtain the reprint, which is available for a small sum. [A much longer review of this publication appeared in the *Chronicle, WHO* 8 (1954) 30-31.]—SR. HILARY ROSS

DOULL, J. A. Leprosy. *Vet. Adm. Tech. Bull. Tuberc.* 10-98, March 15, 1954, pp. 1-18.

This is a thorough resume of leprosy compiled for the benefit of physicians and distributed to the various Regional and Area Medical Offices of the Veterans Administration. It is divided into ten parts, namely: introduction, geographic, sex and age distribution, etiology, pathology, lepromin reaction, classification, clinical features, diagnosis, treatment and control. It is up to date and contains 71 references.

—SR. HILARY ROSS

MALEKI, M. A. La lèpre en Iran et les résultats obtenus par "la sulfon-thérapie."

[Leprosy in Iran and results of treatment with derivatives of diaminodiphenyl sulfone.] Paper presented at the Tenth International Congress of Dermatology, London, July, 1952.

Leprosy has existed for a very long time in Iran and is still endemic almost everywhere in the country. It occurs chiefly in the North, North-East, North-West and South. There are many more cases than is generally believed—persons with abortive forms who do not seek medical aid—but no regular statistics are available. The patients under supervision are those residing in the two leprosaria, at Machad and at Tabriz, 500 in all. The writer has been able to conduct regular observations on 26 patients, aged 15 to 50, in his clinic from 1948-1950. Treatment has been with promin, which has been tolerated well. In all cases, bacilli could no longer be found after 50 injections (3 months' treatment) and there was general improvement.—[From abstract in *Excerpta Med.* 6 (1952) 377.]



MOUNT, R. A. Medical mission to Yemen, Southwest Arabia, 1951. I. Geomedical observations. *American J. Trop. Med. & Hyg.* **2** (1953) 1-12.

The following statement regarding leprosy is made: Leprosy of the nodular, anesthetic and mixed types occurs. Petrie is of the opinion that it is predominantly a disease of the middle heights, in the region between Ibb and Zabid. No data regarding prevalence could be obtained. Segregation is not practiced. Cases of the mixed type were seen in all three geographic regions visited. —H. W. W.

BELTRAN ALONSO, A. *Epidemiologia y clinica de la lepra en la provincia de Jaen*. Jaen, Spain, published by the author, 1954, paper-bound, 99 pp. + 19 plates with 66 pictures.

This booklet presents in detail data which were summarized in a paper read at the Madrid Congress, an abstract of which appeared in *THE JOURNAL* **21** (1953) 596. It contains numerous tables and text-figures, several inserted maps, and 66 clinical photographs collected on plates at the end. It obviously represents an intensive study of the situation in Jaen province. —H. W. W.

Y NUÑEZ ANDRADE, R. *La lepra en la República Mexicana en 1952. Algunos datos geográficos, históricos y epidemiológicos*. [Leprosy in Mexico in 1952; some geographical, historical and epidemiological data.] *Gac. Med. Mexico* **83** (1953) 5-18.

Leprosy is enough of a public health problem in Mexico for there to be in the Department of Public Health and Assistance a special organization to fight this disease, called the National Campaign Against Leprosy. Some of its activities, as well as other facts concerning leprosy in Mexico, are related in this article. Leprosy was probably brought in by the Spanish conquerors and by Negro slaves in the early part of the 16th century, when it first was recognized in the Yucatan peninsula. Travelers from the Orient spread the disease along the Pacific coast. The number of officially registered cases, up to December 31, 1952, was 11,087. The highest prevalence rate is found in the state of Colima, with 310.8 patients per 100,000 population. The rate for Mexico as a whole is 40.7 per 100,000. Many regions in the country have not yet been intensively surveyed, and there is sometimes a disinclination to give information to health officers, so there may be over 50,000 cases in the country. Type distribution: about 66% lepromatous, about 20% tuberculoid, and the remaining 14% indeterminate. Age: 90% adults. The disease is rare in persons of pure white or pure Indian blood; 98% of persons with leprosy are "mestizos"; almost all are classed as poor. The antileprosy organization has a leprosarium, 4 special wards in general hospitals, and 19 dispensaries for treating the disease. With these facilities, about 5% of the patients are isolated, 3.6% in the leprosarium and 1.3% in the wards. Specific treatment with the sulfones has been given to 13.7%. Private contributions have added three segregation homes which house about 60 healthy children separated from their parents since birth.—[From the *J. American Med. Assoc.* **153** (1953) 1568 (Foreign Letters).]

Y SLOMAN, J. G. Hansen's disease in New Guinea. *Med. J. Australia* **2** (1953) 487-488.

The author, a medical student who had served for two months with the Health Department of New Guinea early in 1952, saw a number of leprosy cases at both Gemo Island, out of Port Moresby, and at the Rabaul Native Hospital in New Britain. He says that although no definite statistics are available, there is an impression that the disease is more common in both regions than previously. The tuberculoid type predominates. It is stated, more or less parenthetically, that although leprosy is not a public health problem among the white population of Australia, it has become more prevalent among the black Australians. A recent survey showed 56 cases per 1,000 in the Northern Territory. —H. W. W.



ARNOLD, H. L., JR. Leprosy. J. American Med. Assoc. **154** (1954) 360 (Correspondence).

This is a comment on the proposal of Feldman that *M. leprae* might be renamed *M. hansenii*, to give reason for changing the name leprosy to "hansenosis" [THE JOURNAL **22** (1954) 88-90]. The established names have world-wide acceptance, whereas the objectionableness of the word leper and the debatable objectionableness of the word leprosy are, as Chaussinand has pointed out, purely Anglo-Saxon problems. Both the Havana and Madrid congresses ruled against the former term, but recommended retention of the latter. "General, unemotional public acceptance of [the words] syphilis, cancer, and tuberculosis has been achieved for these three once horrifying diseases by talking and writing about them under their proper scientific names. Could this have been done as well, or at all, if they had been renamed 'schaudinosis,' 'virchowosis,' and 'kochosis'?" These names would have continued to inspire the same emotional reactions, once they became understood, and the attempt to bypass a tedious program of public education by using "hansenosis" would have the same result. The writer recommends the free, unemotional use of the word leprosy until its sound evokes, as does the word tuberculosis today, only the picture of another disease that can be controlled by proper medical treatment.

—H. W. W.

COMEL, M. Quesiti e problemi della lepra in Italia. [Questions and problems of leprosy in Italy.] Athena **18** (1952) 15-16.

The article deals with the endemic cases of leprosy in the neighborhood of Lucea, Toscana (see THE JOURNAL **18** (1951) 519). Many cases belong to the tuberculoid form, clinically benign and epidemiologically not very contagious. —MAURIZIO TERNI

MURAZ, G. Nécessité de réorganiser en Afrique Noire française la lutte contre la lèpre. [The need of reorganizing the campaign against leprosy in French West Africa.] Maroc Méd. **31** (1952) 127-128.

—Afrique Noire française. De la nécessité d'y organiser la lutte contre la filariose (volvulose oculaire). [French West Africa. The need of reorganizing the campaign against leprosy and for organizing a campaign against ocular filariasis.] Bull. Acad. nat. Méd. **135** (1951) 588-590; also: Presse Méd. **59** (1951) 1604-

—Une rapide enquête médicale en Afrique Occidentale française. II. Du Sénégal au Soudan et en Haute-Volta: propos sur la lèpre, la trachome et sur un empire noir soudanais disparu au XII<sup>e</sup> siècle, la Ghana. [A rapid medical survey in French West Africa. II. From Senegal to Sudan and in Upper Volta. Leprosy, trachoma and a black Sudanese empire, La Ghana, lost in the 12th century.] Presse Méd. **59** (1951) 757-758.

The number of persons with leprosy in French West Africa is estimated at about 200,000, of which 34,000 are receiving regular treatment, generally by weekly injections of chaulmoogra oil. This treatment is now being superseded by the sulfones, and, sulfone treatment by mouth having proved difficult here, the author discusses the possibility of administering by intramuscular injections sulfones suspended in chaulmoogra or arachis oil. The injections being given only two times a month, this method will permit the treatment of twice the number of patients with the same personnel. Treatment trials by mouth with Cimedone, DDS, and ethyl cimedone or ethyl diamino-diphenyl sulfone chaulmoograte, gave satisfactory and almost the same results.

—M. VIETTE

POINDEXTER, H. A. Epidemiological survey among the Gola tribe in Liberia. American J. Trop. Med. & Hyg. **2** (1953) 30-38.

In a survey of some 3,000 persons of the Gola tribe, in the Western Province of Liberia, malaria, treponemiasis and hookworm infections were found to be the most im-



portant diseases. Practically one-third of the individuals (960) had one or more types of skin pathology, mycotic lesions and tropical ulcers greatly predominating. Five cases with leprotic lesions were seen, these constituting 0.5% of those with skin diseases.

—H. W. W.

ROGERS, L. The reduction of leprosy incidence by isolation of infective cases; combined with six-monthly surveys of all contacts to detect new cases in an easily curable stage. *Indian Med. Gaz.* **87** (1952) 528-530.

This is an account of the plan recommended in 1922 and 1925 for controlling leprosy by isolation of infectious patients and examinations of contacts at intervals of 6 months for 10 years. The results of this plan are recounted as used in Nauru Island, the Southern Sudan, South Africa and South-Eastern Nigeria. The use of this plan in India in selected areas of high incidence is recommended. A preliminary educative campaign is necessary in the trial areas, so as to convince the patients of the greater chance of recovery now that the sulfones are clearing up many cases which were intractable before, and of the importance of their children and families being safeguarded from infection by their isolation.—[Abstract from *Trop. Dis. Bull.* **50** (1953) 819-820.]

FIGUEREDO, N. and DESAI, S. D. Leprosy in children. *Indian J. Child Health* **1** (1952) 285-295.

The authors discuss the clinical, bacteriological, immunological (lepromin test) and therapeutic features of leprosy in children as found in Bombay. The clinical manifestations are illustrated with 19 photographs. They stress the importance of searching for lepra bacilli by the method of chloroform extraction of a biopsy specimen in those very young children in whom the presence of tactile anesthesia is difficult to elicit. Regarding treatment of children, they used DDS orally, 10 to 100 mg. twice a week, without observing any marked toxic symptoms.

—DHARMENDRA

PORTUGAL, H., CARNEIRO, F. and FÉO, A. Eritema nodoso leprótico em criança. [Erythema nodosum leprosum in children.] *Ann. brasileiros Derm. e Sif.* **27** (1952) 95-101.

From the literature on erythema nodosum leprosum and on childhood leprosy, it would seem as if the condition is a noteworthy occurrence in childhood. It appears, however, to be rare. The case studied indicates the frequency of tuberculosis as the cause of erythema nodosum in childhood. Among cases [sic] less than 9 years of age whose parents and siblings were lepromatous [one was seen in which] erythema nodosum was the first manifestation of the disease, but all examinations of the patient were negative. Histological examination revealed the presence of the exudative and granulomatous lesions of erythema nodosum, besides previous lepromatous lesions (inapparent diffuse leprosy). The lepromin and tuberculin tests gave negative results. X-ray examination of the lungs revealed healed attenuated lesions. Although certain particular features are attributed to ENL, none of its clinical and evolutive characteristics are foreign to the common form. The histological examination confirms this point of view. In studying earlier cases, the granuloma of Meischer was found, which is considered by the authors as specific for erythema nodosum. ENL is sometimes localized around or inside of old foci, both in diffuse or inapparent leprosy and in lesions perceptible to clinical examination. [The abstract here summarized seems to have suffered considerable mutilation, perhaps in the printing. Apparently only one case is dealt with, as suggested by the inset in brackets, from among an unstated number of children (spoken of as "cases"). There is also something fragmentary about giving BCG in a total dose of 400 cc. per person, with no patient showing an ENL eruption in the following six months.]—[From abstract in *Rev. Sif. Leprol. y Derm.* **8** (1952) No. 2, p. 36.]



GUADAGNINI, M. Lepromatous neurotic lesions; their great incidence in certain sensory and motor branches, and their treatment. *Lep. Rev.* **24** (1953) 147-155.

Certain sensory-motor nerves are more liable to become tender and hypertrophic than others because they pass through ligamentous tunnels which press on them. It is always above the compressed portions of the nerve where the enlargement occurs with a dilatation of the epineural capillaries inducing a varicosity accompanied by a stagnation of the blood circulation in the neural vessels which adds to the active local congestion. The compressed part of the nerve remains free of congestion and thickening. For this reason the author not only does a decapsulation operation of the nerve where it is swollen, but also opens up the ligamentous channel and, in the case of the ulnar nerve, provides a fresh channel in front of the internal condyle. Of 146 cases treated, the affection was in the ulnar nerve in 103 instances, in the external popliteal 24 times, and in the posterior tibial where it passes through the tunnel formed by the internal tarsal ligament 4 times.

—G. O. TEICHMANN

POIRIER, A., RENAULT, R. and GENDRE, H. Lèpre a forme sarcoïdique. [Sarcoid form of leprosy.] *Bull. Soc. française Derm. et Syph.* **58** (1951) 463-466.

A case report of a man who had lived in Syria, Morocco, French West Africa and Indochina, and had had an erythematous lesion which progressively increased in size, while about 100 new elements became disseminated over the entire skin except the scalp. At first only erythematous, these elements became nodular, pea- to nut-sized, without anesthesia. The first diagnosis was Besnier-Boeck-Schaumann disease, but a histological examination revealed Langhans giant cells with lymphoid cell infiltrations and foci of plasmacytes, and numerous acid-fast bacilli often grouped in globi inside of Virchow cells. Of special interest are the rapid appearance of the lesions, their sarcoid appearance, the absence of sensory disturbances, and the importance of the histological examination.

—M. VIETTE

FLOCH, H. Les réactions lépreuses sont-elles évitables? Comment les traiter? [Are lepra reactions preventable? How can they be treated?] *Inst. Pasteur Guyane et Terr. Inini, Publ. No. 254, 1952, June; also: Bull. Soc. Path. exot.* **45** (1952) 344-350; *also Arq. mineiros Leprol.* **12** (1952) 26-31.

"Lepra reactions" appear in patients with the lepromatous form (leprotic reactions), and the tuberculoid form (reactional tuberculoid *ab initio* and tuberculoid in reaction). These reactions are most frequent during the first year of sulfone treatment. If they are to be avoided as much as possible, the intramuscular route for the sulfones is indicated, advice especially good for the first months of sulfone treatment. Vitamin PP therapy may be employed as a preventive measure; it evidently increases tolerance. In patients with reactions, decrease of the dose and later slow increase is advocated. A change of route may be effective. The reaction threshold should be established, and from time to time attempts should be made to pass over this threshold. Combinations may be useful, as DDS with succinylsulfone or 108MM, or DDS and thiosemicarbazone. As an adjunct treatment, intravenous anthiomaline or—and especially—vitamin PP therapy are advocated. Tuberculoid reactions should be kept under active sulfone treatment (chiefly DDS), with, as an adjunct, massive doses of vitamin D<sub>2</sub> or C.—[From author's summary.]

KOBAYASHI, S. The studies on the perforating ulcer in various types of leprosy. I. *La Lepro* **22** (1953) 35-38 (in Japanese; English abstract, p. 35).

———. Idem. II. *Ibid.* 39-42 (abstract p. 39).

———. Idem. III. *Ibid.* 71-75 (abstract p. 71).

———. Idem. IV. *Ibid.* 77-81 (abstract p. 77).

(1) The number of patients with perforating ulcer was 217 out of 1,006 cases (21.57%). As to the type: macular, 0 in 60 cases, (0%); neural, 75 in 272 cases,



(27.6%); and nodular, 142 in 647 cases, (21.1%). Perforating ulcer occurs mostly in moderately advanced and advanced stages of leprosy. Areas of predilection: toe, sole of the foot, hand, ankle, instep and leg. It occurs more frequently in males than in females, and more frequently on the right side than on the left.

(2) Regarding the differentiation between the perforating ulcers of leprosy and ulcers of other neural diseases, the clinical changes of the extremities affected by perforating ulcer are: Loss of hair, prominent or slight; anesthesia of the palm and sole; suspension of perspiration in those areas; and thickening of the nerve of the forearm and leg. Bacilli were found in the granulation tissue and sequestrum ulcer in 1 of 20 neural cases and 15 of 44 nodular cases. The histopathological examination of the granulation of the perforating ulcer in the nodular type shows almost same [sic] leprosy changes.

(3) Vasomotor instability due to leprosy is a cause of leprosy perforating ulcer. The pH of the wound secretion is 6.0-7.6 in the advanced stage and 7.4-8.2 in the slight stage of perforating ulcer. The blood sedimentation rate of the serious perforating ulcer combining with leprosy increases [sic], and the lymphocytes of the local blood are increased in comparison with the general blood. In the X-ray picture, marked defects and atrophy are observed, especially in the metatarsals and phalanges. Indican urine is much more in the perforating ulcer combining with leprosy than in the contrast.

(4) Operation on the sympathetic nerve is considered to be the best treatment for perforating ulcer of leprosy. Keeping the patients quiet in bed is helpful. Acetylcholin injection has little effect. Some of various partial treatments are a little effective, but the physical treatments are useless.—[From abstracts.]

✓ KOBAYASHI, S. The disturbance of the bladderwall-sensitivity to temperature in various types of leprosy. *I Ryo* 6 (1952) 313-315 (Japanese text); English summary, p. 316).

Forty cases of the various types of leprosy were examined with regard to the sensitivity of the bladder wall to changes in temperature. Patients whose sensitivity to temperature was disturbed were found in the group with advanced stages of nodular and neural leprosy. Patients who had paresthesia of the skin or alopecia of the pubic part also experienced disturbances of the sensitivity to temperature. Disturbance of the kidney function is often related to a disturbance of the sensitivity of the bladder. The disturbance of the sensitivity of the bladder is caused by lepromatous infiltration through the mucous membrane of the bladder wall.—[From the English summary.]

✓ FURNISS, A. L. Leproma in female breast presenting as carcinoma. *Indian Med. Gaz.* 87 (1952) 304.

The author reports a case of moderately advanced diffuse lepromatous leprosy in a female aged 50 with a chronic ulcer on the right breast overlying a lump and discrete nodules, simulating carcinoma or fat necrosis. The nature of the lesion was cleared up by biopsy of the breast including some of the nodules, which revealed a lepromatous histology.

—DHARMENDRA

✓ DHARMENDRA and CHATTERJEE, S. N. A case of leprosy wrongly diagnosed as neurofibroma. *Leprosy in India* 24 (1952) 160-163.

The authors record a case of leprosy with slight anesthesia and deformity of the right hand and thickened right ulnar nerve, which was wrongly diagnosed as a case of neurofibroma, as a result of which the nerve was excised and the right femoral cutaneous nerve was grafted in its place. The authors stress the importance of bearing in mind, especially in endemic areas, the possibility of leprosy before concluding that some rare disease is being dealt with.

—AUTHOR'S ABSTRACT



- 8 SAKURAI, H. and YOKATA, T. [A case of hyperhydrosis in leprosy and its histopathological observation.] *I Ryo* 6 (1952) 39-40 (in Japanese).

In a case of lepromatous leprosy, of 7 years duration, even in the winter there was profuse perspiration. After the patient died the histological examination revealed lepromas in the cervical sympathetic ganglia and hypertrophy of sweat glands in the normal skin areas. Compensatory hyperhydrosis? —K. KITAMURA

- 8 ARGÜELLES CASALS, D. Nueva técnica de la prueba de la histamina en la lepra. [New technique for the histamin test in leprosy.] *Rev. Sif. Leprol. y Derm.* 8 (1952) 30-32.

Following a description of Lewis' triple response of the skin to histamin, and a review of the different techniques employed in the diagnosis of leprosy by this test, the author proposes a simple, noninstrumental technique: the pinching, with the fingernail, of the skin in the suspected area to provoke a local discharge of histamin as normally happens after every cutaneous irritation. It is a histamin test without needle. The response, evidently, will never be as intense as when histamin is injected.

—F. R. TIAN

- 8 DAVIDSON, W. S. An evaluation of new treatment and other factors in leprosy. *Lep. Rev.* 24 (1953) 139-146.

Owing to the difficulty in estimating the real effect of any treatment in leprosy, the author has dealt with the patients he has treated, not as individuals but as groups. Various factors—clinical symptoms, lepra reactions, blood counts and bacillus counts—are given marks, positive or negative numbers, indicating progress or regression. The totals are added up and divided by the number of patients, thus giving a progress index for each drug. As a result he finds that he had the best results in a small group receiving Thiacetazone (Neustab) 200 mgm. daily. Smaller doses proved ineffective. Intramuscular sulphetrone and DDS, while less toxic, were somewhat inferior.

—G. O. TEICHMANN

- 8 CHANG, Y. T., WOLCOTT, R. R. and DOULL, J. A. Sulfone therapy of leprosy. *Med. Clin. No. America* 38 (1954) 599-610.

This is a discussion of the following group of sulfone drugs in current use to date: (a) the parent sulfone, DDS; (b) disubstituted derivatives, such as promin, diasone and sulphetrone; (c) monosubstituted compounds, such as hydroxyethyl sulfone (HES); (d) nuclear substituted derivatives, as promacatin; and (e) the asymmetric sulfone, promizone. The authors bring up to date their clinical usage, pharmacology, toxicity effects and results of treatment. There is one figure giving the chemical structure of the various sulfone compounds, and photographs of two Carville patients showing improvement under therapy and one patient showing improvement with subsequent relapse. The article is very informative, and contains a good bibliography.

—SR. HILARY ROSS

- 8 YOSHIE, Y., TAKEDA, Y., KOSHIRO, Y. and HATTORI, T. Chemotherapy of leprosy with di-(p-hydrazinophenyl) sulfone. *Japanese J. Exper. Med.* 22 (1952) 317-323.

Di-(p-hydrazinophenyl) sulfone has the hydrazino radical in place of amino radicals at the *para* position of diaminodiphenyl sulfone. In this paper are reported its effects on 7 leprosy patients, 5 lepromatous and 2 macular, studied for two years. Considerably good effects were obtained in most of the lepromatous cases. The daily dose, usually 30 to 50 mgm., was given per os without any serious side effects. Lepra bacilli in the nasal discharge or in skin lesions diminished or disappeared in 3 or 4 months.

—K. KITAMURA



- 8 FLOCH, H. and SUREAU, P. Sur les accidents provoqués par la thérapeutique sulfonée et intéressant le système nerveux. [Ill effects due to sulfone treatment affecting the nervous system.] *Inst. Pasteur Guyane et Terr. Inini, Publ. No. 268, 1952, July.*

The authors recall the 6 cases of "sulfone psychosis" reported in 1951 by Lowe, who said that when he used not more than 200 mgm. of DDS, that condition was no longer observed. Cases of polyneuritic disturbances, generally mild, have also been seen in sulfone therapy. In Guiana the authors have observed four cases of psychosis and one of polyneuritis apparently induced by sulfone treatment. Similar psychic disorders have also been seen by de Montaigne in Jamaica, and by de Mesquita in Surinam (personal communication). Polyneuritis is apparently much rarer than psychosis, which latter, poorly defined on the whole, generally occurs in mentally weak patients. It has been encountered in cases treated with all kinds of sulfones, whether the mother substance (DDS) or mono- or disubstituted compounds. If it has occurred more often with DDS than with the others, it is because massive doses have sometimes been employed, or the dosage has been increased too rapidly. These disturbances are reversible, and can be relieved readily if the dosage has been small, as in the majority of cases which occur early in the treatment. In most patients with relatively mild psychic disorder the condition subsides in some weeks or months after suspension of the treatment. That can generally be reestablished with caution later on, which indicates that the trouble is due to a temporary state of intolerance. Lecoq believes that certain disturbances, notably the polyneuritis, are due to acidosis induced by the treatment. It is probable that in psychically predisposed persons the state of acidosis may lead to mental disturbance. Acidosis can be corrected in various ways, and it is advisable to control the acid-base equilibrium of the patients before giving them sulfone treatment.

—AUTHOR'S ABSTRACT

- 8 FLOCH, H. and LECUILLER, A. Mode d'action des sulfones dans la lèpre. VIII. Ce que devient la diamino-diphényl-sulfone administrée expérimentalement à des cobayes. [Mode of action of sulfones in leprosy. VIII. The fate of the diamino-diphényl-sulfone administered experimentally in guinea-pigs.] *Inst. Pasteur Guyane et Terr. Inini, Publ. No. 264, 1952, June; also: Bull. Soc. Path. exot. 46 (1953) 10-15.*

Employing the method used by Simpson and Molesworth in studying the concentration of DDS in the tissues of guinea-pigs and man following injection of an oily suspension of the drug, the authors have determined the DDS concentration in the organs (liver, kidneys, heart, brain, pancreas, small intestines and blood) and in the urine of guinea-pigs given (a) a single dose of 100 mgm., (b) a single dose of 180 mgm., (c) 2 doses of 50 mgm. each per week for varied lengths of time, and (d) 2 doses of 100 mgm. each per week, also for varied lengths of time. In guinea-pigs weighing 590 gm. on the average the 180 mgm. dose proved lethal to 50% of the animals; i.e., in the guinea-pig the L/50 dose of DDS by mouth is 0.30 gm./kgm. An accumulation of DDS occurs in the tissues, specially in the liver and kidneys, where after 42 doses of 100 mgm. each there were found DDS levels of 23.9 mgm. and 21.5 mgm. per 100 gm. This accumulation may become dangerous, and it seems that 25 mgm./% in the liver is the limit value, not to be exceeded. These results justify, in the opinion of the authors, the rest from treatment for one day each week and one week every two months.

—AUTHOR'S ABSTRACT

- 8 COPPOLINO, A. and LA SCALA, M. Il tiosemicarbazone nella terapia della lebbra. [Thiosemicarbazone in the treatment of leprosy.] *Dermatologia (Napoli) 4 (1953) 164-168.*

Report on experiences with thiacetazone in the treatment of 12 cases of leprosy. The lack of intolerance symptoms and the excellent therapeutic results are emphasized



as outstanding features of this new remedy.—[Abstract from *Excerpta Med.* 8 (1954) 75.]

✓ DUPERRAT, BORY and BASSET. Le P.A.S. en perfusion dans le traitement de la lèpre. [PAS by perfusion in the treatment of leprosy.] Bull. Soc. française Derm. et Syph. 59 (1952) 136-137.

Two lepromatous patients were treated with PAS in 15:1000 concentration by intravenous perfusion in the course of reaction. One received 500 cc. per day for 8 days. From the beginning of the treatment the fever dropped to 38.5°C, and the general condition and skin symptoms improved. On the 8th day, however, the temperature again rose to 41°C, with exacerbation of the general symptoms. Cessation of the treatment was followed by a rapid subsidence of the reaction. The second patient received increasing doses, from 125 cc. reaching 500 cc. only on the 8th day. The reaction rapidly evolved toward cure. PAS seems then to have a higher degree of activity on the bacilli in the circulation than on those in the organized lesions. —M. VIETTE

✓ COSTELLO, M. H. Leprosy (lepromatous type) improved by isoniazid (Nydrazid: isonicotinic hydrazid). A.M.A. Arch. Dermat. & Syph. 68 (1953) 225-226 (case presentation).

A complete clinical description is given of a Puerto Rican woman, aged 25, in whom leprosy bacilli were found on the skin in 8 of the 15 locations examined. Treatment consisted of 100 mg. of Nydrazid four times a day for 2 months, at which time there has been definite improvement. (This case was discussed by two dermatologists both of whom are not convinced that isonicotinic acid is better than the sulfones for lepromatous leprosy. —SR. HILARY ROSS

CORMIA, F., COSTELLO, M., BARKER, L., NELSON, C., WILSON, E. and CRAMER, J. Isoniazid (Nydrazid) in treatment of cutaneous diseases; cutaneous tuberculosis, leprosy, sarcoidosis and miscellaneous dermatoses. A.M.A. Arch. Dermat. & Syph. 68 (1953) 536-544.

The authors treated 7 cases of leprosy, 3 lepromatous, 3 tuberculoid and 1 indeterminate, with varied daily doses of isoniazid for eight months. There was transient initial improvement in the lepromatous cases, followed by partial clinical relapse. The lesions became bacteriologically negative after four months of treatment, and improvement has been maintained to date. Tuberculoid leprosy was not improved. —SR. HILARY ROSS

✓ COSTELLO, M. Leprosy, tuberculoid type, treated unsuccessfully with isoniazid (Nydrazid), and diplopia caused by leprosy. A.M.A. Arch. Dermat. & Syph. 68 (1953) 597-598.

This is a case history of an Italian man of 55 who had had leprosy for 40 years but was first diagnosed by biopsy in 1944. Because of circinate erythema-multiforme-like lesions the patient had been given that diagnosis by a number of physicians. Promin, diasone, promacotin, and cortisone and lastly isoniazid had been administered without success. —SR. HILARY ROSS

✓ ORRU, A. Considerazioni sulla terapia streptomycinica dell'infezione leprosa. [On streptomycin therapy in leprosy infection.] Rassegna medica sarda 54 (1952) 106-114.

In 10 nodular cases, 3 of them with sensory troubles, treated with streptomycin, the author observed poor tolerance to the drug, with reactions involving fever, loss of body weight, headache and albuminuria. In 7 cases, however, improvement of the disease occurred, and in 3 of them apparent recovery. The author believes that the inconveniences of the streptomycin treatment did not offset the advantages. —MAURIZIO TERNI



✓ MERKLEN, F. P. and RIOU, M. Action favorable du sel de sodium de l'ester dibenzol sulfonique de la di-hydro-vitamine  $K_3$  dans le trois cas de réaction lépreuse. [Beneficial action of the sodium salt of the dibenzol sulfonic esters of the dihydrovitamin  $K_3$  in three cases of lepra reaction.] Bull. Soc. française Derm. et Syph. 59 (1952) 267-270.

✓ ———— Essais d'un ester de la dihydrovitamine  $K_3$  dans la lèpre. [Trials of a dihydrovitamin  $K_3$  esters in leprosy.] Presse Méd. 60 (1952) 1570-1572.

Two patients in a reaction state occurring during sulfone treatment and persisting despite vitamin C, vitamin PP, antibiotics and antimony were improved by the intravenous injections of dihydrovitamin  $K_3$  (K-thrombyl). They were given 50 to 100 mgm. daily for one week, and every 2 or 3 days thereafter. A reaction appearing spontaneously in a third, untreated, patient also responded quickly. The treatment also ameliorated the neuritic pains in another patient which were resistant to all kinds of treatment. Sixteen other patients were given the same treatment for 20 to 30 days, some of them showing a better tolerance to sulfones, with healing of the lesions in 3 previously untreated cases (2 lepromatous and 1 indeterminate). A patient with keratitis and iritis was also benefited. The general condition of all patients was favorably influenced.

—M. VIETTE

✓ FLOCH, H. and SUREAU, P. La vitaminothérapie C dans la lèpre, (formes tuberculoides réactionnelles. [Vitamin C therapy in leprosy of the reacting tuberculoid type.] Bull. Soc. Path. exot. 45 (1952) 443-446.

Two cases of reacting tuberculoid leprosy are described, and the effects on them of vitamin C. One patient was given 500 mgm. subcutaneously 6 days a week to the total of 30 gm. The other patient was given 2 gm. intravenously for 10 days and then 500 mgm. twice a day by mouth until 31 gm. had been administered at the end of a month. There was much improvement in both cases, especially in the second. The results are considered to be better than those obtained with vitamin  $D_2$ .—[From abstract in Trop. Dis. Bull. 50 (1953) 35.]

✓ FLOCH, H. and HORTH, R. Action de la vitamin  $B_1$  sur les névrites lépreuses. Vitaminothérapie et lepre. [Vitamin  $B_1$  action on leprosy neuritis. Vitamin therapy and leprosy. Bull. Soc. Path. exot. 46 (1953) 262-267; also Inst. Pasteur Guyane et Terr. Inini, Publ. No. 270, 1952, Aug.

The relatively frequent occurrence of leprosy neuritis, and its development during sulfone treatment, poses a serious problem and one difficult to solve. However, the nerve lesions and their trophic sequelae in the early lepromatous forms are ameliorated by sulfone treatment, as are also certain neuritic disturbances in the tuberculoid or indeterminate forms. The authors report on 6 cases in which they have used vitamin  $B_1$ . The effects on the leprosy neuritis were practically nil. Leprologists may be tempted to employ the "antineuritic vitamin," but it only results in the loss of valuable time. However, it is in order to complete the trials of "vitamin therapy in leprosy"—vitamin  $D_2$  and C in high doses, beneficial in the reactional tuberculoid forms; vitamin PP, recommended for intolerance to sulfones and lepra reactions; and vitamin E, which is perhaps beneficial against neuritis and its consequential trophic disorders.

—AUTHOR'S ABSTRACT

✓ FLOCH, H. and SUREAU, P. Action du 1500-F en injections locales dans les névrites lépreuses. [Effects of local injections of 1500-F in leprosy neuritis.] Inst. Pasteur Guyane et Terr. Inini, Publ. No. 273, 1952, Oct.

This is a report of good results obtained with succinyl sulfone (1500F) in several years of general leprosy treatment. For leprosy neuritis they have applied in Guiana the intra- and peri-neural injections of 1500F as employed by A. Jasbon Mantilla. For cubital neuritis a 25% solution is injected (3 cc. twice weekly in a series



of from 10 to 15 injections) above the epitrochleo-olecranal groove. These injections are evidently a little blind, and if one tries to make them intraneural, they certainly are often perineural to a large extent. The injection is practically not painful although the patient may have a feeling of tension in the injected region, and a transitory numbness of the limbs. On the basis of their observations in 8 cases the authors conclude that such injections have a definite analgesic effect, and that the method merits trial on a larger scale.

—AUTHOR'S ABSTRACT

ALLDAY, E. J. and BARNES, J. Treatment of leprosy with B.283. *Irish J. Med. Sci.* **6** (1952) 421-425.

B.283 is phenazine dye, described in 1948 by Barry. In high dilution it inhibits the growth of tubercle bacilli and is little antagonized by serum. Ten cases of lepromatous leprosy were treated with B.283 for a year in the Ogoja leprosy settlement in Nigeria. The average dosage was 500 mgm. daily. Six of the patients showed improvement. The writers consider that the drug should be given further trial, but that as it is potentially a toxic substance it must be used with caution.

—G. O. TEICHMANN

GATE, J. and ROUSSET, J. Premiers résultats d'un essai de traitement de la lèpre par une nouvelle méthode d'antigénotherapie. [Early results of the trial of a leprosy treatment by a new technique of antigen therapy.] *Minerva Dermatol.* **27** (1952) 1-16.

Seventeen leprosy patients were treated for 9 months with intradermal injections of 0.1 cc. of either suspension cultures of acid-fast bacilli obtained from a leproma, or an antigen extracted from these cultures, the method of preparation of which is not indicated. In the majority of the patients there appeared, at the injection site, an erythematous papule followed by a nodule 2 or 3 cm. in diameter. This latter showed softening with necrosis and loss of substance, usually healing in 2 months. There sometimes occurred trails of lymphangitis in the local area, and strong febrile reactions. In most of the cases there also occurred eruptive cutaneous outbreaks, at times accompanied by iritis. These skin lesions were sometimes transitory, sometimes persistent and lasting for 2 to 4 months. This treatment led to regression of some of the skin lesions in patients already treated with sulfones, and stopped the neuritic or ocular pains. The injections provoked no reaction in nonleprosy persons.

—M. VIETTE

[This report is evidently related to, but not identical with, one of the papers presented at the Madrid Congress, an abstract of which appeared in *THE JOURNAL* **21** (1953) 594.—EDITOR.]

WADE, H. W. Iodine in leprosy. *American Rev. Tuberc.* **68** (1953) 295-296 (Correspondence).

This note refers to what, in *THE JOURNAL*, is called a "symposium by correspondence" which appeared in the December 1952 issue of the *American Review of Tuberculosis*, in which as a result of an inquiry various persons gave their ideas of the effects of iodine on human tuberculosis, the consensus being that little is really known about it. The note then relates something of the experience of leprologists with iodine (potassium iodide), beginning with a quotation from Hansen and Looft: "At the beginning of his studies Dr. Danielssen had great confidence in iodine, but he soon learned what a very dangerous remedy it was in this disease. Even small doses of iodine produce new eruptions of leprosy tubers or patches, and Dr. Danielssen therefore ultimately used it as a test in cases of apparent cure. When a patient was considered cured, he gave him iodide of potassium, and if no new eruption developed, the cure was considered complete." More recent experience with the drug is reviewed briefly, and views adopted by the Manila Conference in 1931 and the Cairo Congress in 1938 are cited.

—AUTHOR'S ABSTRACT



- DE OLIVEIRA LIMA, S. Tratamento da tuberculose em Hansenianos. Mortalidade por tuberculose em Curupaiti. Mortalidade, morbidade e profilaxia da tuberculose em doentes de lepra. [Treatment of tuberculosis in patients with leprosy. Mortality from pulmonary tuberculosis in Curupaiti. Mortality, morbidity and prophylaxis of tuberculosis in patients with leprosy.] *Rev. brasileira Tuberc.* **20** (1952) 105-118.

The improved treatment of leprosy with the sulfones resulted in increased opportunities for treating tuberculosis in patients with leprosy. At first it was necessary to interrupt sulfone treatment in patients with active pulmonary tuberculous lesions, because such lesions are aggravated by the sulfones in almost every case. The thiosemicarbazones, however, provided a satisfactory means of treating the two conditions simultaneously. The leprosy lesions became bacteriologically negative in little more than four months of intensive treatment with thiosemicarbazone, and at the same time the pulmonary tuberculous lesions improved. Severe lepra reactions can be successfully overcome with penicillin. Streptomycin is particularly effective in the ocular, nasal, and rhino-laryngeal complications of leprosy, and produces a marked improvement in the patient's general condition. Its continued administration had proved advantageous even when tests for streptomycin resistance were positive. Its use combined with collapse therapy not only improves the patient's general condition but has a beneficial effect on local exudative lesions. PAS is a useful adjunct in the treatment of combined leprosy and tuberculosis.—[From abstract in *J. American Med. Assoc.* **150** (1952) 1054.]

- DE OLIVEIRA LIMA, S. and FONTES MAGARAO, M. Tratamento da tuberculose pulmonar em doente de Hansen. [Treatment of pulmonary tuberculosis in patients with leprosy.] *Rev. brasileira Tuberc.* **21** (1953) 397-408.

Leprosy is rare in patients with pulmonary tuberculosis, but the latter is frequent in leprosy patients. Out of 1,019 such patients observed in a period of four years, 119 (11%) had pulmonary tuberculosis. All of them had the dietetic hygienic regimen and were given streptomycin. Collapse therapy was applied to 22 patients with cavities, with cure in 2 cases, improvement in 8, no change in 1, worsening in 8, and death in 3. The results in 38 patients with cavitation who did not have collapse therapy: cure in 2 cases, improvement in 9, no change or worsening in 12, and death in 15. It is concluded that collapse therapy is necessary in the treatment of pulmonary tuberculosis with cavitation in patients with leprosy. In the 45 patients without cavities and without collapse therapy: cure in 38 cases, improvement in 3, no change in 2, and death in 2. Remarkably good results were obtained in 21 out of 22 patients with the two diseases from administration of isoniazid, but the results are recent and conclusions cannot be reached. Streptomycin is of value with simultaneous good results on both pulmonary tuberculosis and leprosy. [See preceding abstract.] This drug is specific in the tuberculoid forms of leprosy. [No mention is made in the abstract of this 1953 paper of thiosemicarbazone, on which emphasis was laid in 1952.]—[From abstract in *J. American Med. Assoc.* **153** (1953) 1490.]

- DE OLIVEIRA LIMA, S. Hidrazidoterapia da tuberculose pulmonar em doentes de Hansen. [Treatment of pulmonary tuberculosis in leprosy patients with isoniazid.] *Clin. tisiol.* **8** (1953) 673.

Isoniazid was tried in 20 leprosy patients who had developed tuberculosis. Clinical, roentgenographic, and bacteriologic improvement was noted in 17. Sputum was converted in 8, weight increased in 18, appetite improved in 14, and the temperature became normal in 7 and decreased in 8 others. Isoniazid also acted favorably on the concurrent leprosy. While not displacing recognized surgical collapse measures, this seems to be the most efficient drug for the treatment of tuberculosis in leprosy cases. The total highest dosage of isoniazid in this series was 16.285 gm., at the rate of 5



mg. daily per kgm. of body weight.—[From abstract in *American Rev. Tuberc.* **69** (1954) 101.]

CROSS, J. B. Diasone, avlosulfon and sulphetrone as therapeutic agents in experimental toxoplasmosis. *American J. Trop. Med. & Hyg.* **1** (1952) 593-597.

This study is a continuation of an earlier one on the effectiveness of diasone and promin in experimental toxoplasmosis in the white mouse. Since the results with diasone had surpassed those with promin, the former was used as the standard for therapeutic evaluation in this experiment. Diasone (0.5%) and avlosulfon [DDS], administered in the diet (0.1%), were found to protect the majority of white mice from death in an otherwise rapidly fatal toxoplasmosis (usually 7-8 days), even when therapy was delayed by  $\frac{1}{2}$  of the survival time of the untreated controls. Sulphetrone used similarly in 1.5% concentration was without effect, and 3% was only slightly protective. The carrier condition was eliminated certainly in 7 and probably in 3 more out of the 11 cases investigated. Since the results surpass those previously reported for diasone and avlosulfon, the method of administration (intermittent dosage following continuous dosage) may have contributed to the increased effectiveness.

—H. W. W.

QUAGLIATO, R. Alta definitiva e forma da molestia. (Casos registrados da Inspetoria Regional de Campinas.) [Definitive discharge and form of disease. (Cases recorded in the regional sanitary district of Campinas.)] *Rev. brasileira Leprol.* **20** (1952) 26-29.

The author studied 63 definitively discharged cases in his sanitary district of Campinas up to 1951, and found that none of them would fit perfectly in the initial lepromatous form. He concludes that, despite the extensive use of sulfones in the last few years, no record could yet be found of a case of a lepromatous patient being given a definitive discharge. This is the same as he observed in the Bebedouro district during the time of exclusive chaulmoogra treatment. He believes that even in the relatively favorable cases it may take about 20 years for a definitive discharge to be forthcoming.—[From author's summary.]

ARCURI, F. and INZERILLO, R. La disprotidemia nella lebbra. Studio elettroforetico del siero nelle diverse forme cliniche di lebbra prima e dopo terapia con tiosemicarbazone. [The blood proteins in leprosy. Electrophoretic study of the serum in the various clinical forms of leprosy before and after thiosemicarbazone therapy.] *Acta Med. italica* **7** (1952) 29-34.

Using electrophoretic methods, the authors have studied the blood serum in 15 cases (9 nodular, 2 neural, 4 mixed) before and after treatment with thiosemicarbazone. Similar electrophoretic methods have been used for various purposes in other infectious diseases. In the leprosy cases they found that, before treatment, the total proteins averaged 7.37 gm., which is in the upper limits of the normal range. The albumin, averaging 3.50 gm., tended to be lower than normal. The alpha and beta globulins showed some slight increase, and the gamma globulin was constantly increased. There was some apparent relationship with the type of the disease. After the thiosemicarbazone treatment the total proteins showed a reduction and the albumin an increase; the gamma globulin content was definitely reduced, the other two globulins remaining unchanged. The changes are believed to result from a nonspecific reaction which manifests itself in increased activity on the part of the endothelial reticulocytes, and which is not related to antibody formation.—[From abstract in *Trop. Dis. Bull.* **49** (1952) 699.]

GUIMARÃES, A. S. Dosagem de proteínas totais em leprosos. [Amounts of total proteins in leprosy patients.] *Arq. mineiros Leprol.* **12** (1952) 187-188.



In this very short article the author reports her findings on the titers of total proteins by a previously-described copper sulfate method, in 300 cases of leprosy. [Nothing is said of the type of the disease or stage of activity.] Certain authors are quoted as saying that increase of total proteins is of rare occurrence, but that it occurs in leprosy and a few other diseases. In 141 of the cases (47%) the titers were found to be below 6.0%, beginning with 5.0%, and in the other 159 cases (53%) they were between 6.0% and 7.5%. Since the normal range is from 6.0% to 7.5%, it is concluded that there were many cases with hypo- but none with hyperproteinemia. The low levels found are attributable "to verminosis, intercurrent diseases or even to leprosis."  
—H. W. W.

ISHIHARA, S. On inorganic phosphorus, calcium and phosphatase in the leprous serum. *La Lepro* **22** (1953) 69-70 (in Japanese; English abstract, p. 69).

The inorganic phosphorus in the serum of all types of leprosy and in erythema nodosum leprosum is within normal range. The calcium range is also normal in all types, but decrease is observed in erythema nodosum leprosum. The alkaline phosphatase is somewhat higher in lepromatous than in macular or neural leprosy, but in all types it is within normal range. In erythema nodosum leprosum the increase is more marked.—[From abstract.]

SUZUE, K., ICHIDA, F. and IMAGAWA, G. Some contributions to the pathology of leprosy's adrenal glands, mainly about the so-called ketosteroid reaction. *Acta Scholae Med. Univ. Kyoto* **30** (1952) 27-45.

The material of this investigation was collected from 31 autopsies of patients in a leprosarium and 16 control autopsies from 1947 to 1949. The results were complicated by the fact that the majority of the patients were at the same time suffering from tuberculosis as well as leprosy. Many also were suffering from malnutrition during that period. The author concludes that the adrenal cortex in leprosy shows a marked diminution of the substance which gives a positive reaction in the ketosteroid test, the diminution being most marked in the lepromatous type. Usually also the amount of 17-ketosteroid in the urine is decreased, especially in lepromatous cases. These results are particularly marked when there are nodules in the adrenals. The changes in the adrenals are supposed to produce a "fatigued state" of the adrenal cortex.—[From abstract in *Top. Dis. Bull.* **50** (1953) 33.]

ARCURI, F. and CANNATA, C. L'eliminazione giornaliera dei 17-chetosteroidi urinari nella lebbra. [The daily excretion of urinary 17-ketosteroids in leprosy.] *Acta Med. italica* **7** (1952) 1-4.

Studying the daily elimination of the urinary 17 ketosteroids in 28 leprosy patients, the authors found noticeable variations, superior or inferior to normal, in 68% of the cases. There was no correlation between the excretion of the androgens and the type, extent or course of the disease. Interpretative hypotheses are offered.—[From the English summary, in *Trop. Dis. Bull.* **49** (1952) 627.]

QUIROGA, M. I., CORTI, R. N. and JONQUIERES, E. D. L. Atrofia testicular leprosa y eliminación urinaria de los 17-cetoesteroides. [Leprous testicular atrophy and elimination of the 17-ketosteroids.] *Actas Dermo-Sif.* **45** (1953-54) 51-56.

Of 35 patients suffering from lepromatous leprosy with testicular atrophy, 22 had normal values of 17-ketosteroids, 4 increased and 9 diminished. The values as found had no relation to the intensity of the affection, the degree of testicular atrophy, or the time of development of the disease. Gynecomastia co-existed in 17 cases. The endocrinological syndrome of these cases shows close relationship with Klinefelter's, Reinfelter's and Albright's syndrome, as suggested by Grabstald and Swan.—[From abstract in *Excerpta Med.* **8** (1954) 272.]



- 8 CANNATA, C. Solfone e potere fagocitario. Ricerche sperimentali. [Sulfone and phagocytic action; experimental studies.] *Minerva dermat.* (Torino) **27** (1952) 65-69.

An experimental study of the phagocyte power in animals subjected to prolonged treatment with sulfone. Apparently large doses of this drug reduce the phagocytic power by 11% on an average, while small doses produce an average increase of 20%. —[Abstract from *Excerpta Med.* **4** (1953) 159.]

- 8 PIRASTU, A. Studi sul potere fitotossico del sangue, delle urine e del liquido di bolla di pazienti affetti da morbo di Hansen. [Study of the phytotoxic character of the blood, urine and blister fluid of patients with Hansen's disease.] *Rassegna medica sarda* **54** (1952) 98-105.

Since the blister fluid of many patients with cutaneous affections has been reported to be phytotoxic, the author studied the toxicity of serum, urine and skin blister fluid (caused by cantharid applications) in 20 leprosy cases on budding lupine seedlings maintained in Sachs nutrient medium. The reaction was considered positive (i.e., the fluids were toxic) if there was a 70% mean reduction in growth, in comparison with the controls. The sera of 10 patients and the urine of 1 patient (with renal lesions) proved to be phytotoxic, but none of the specimens of blister fluid.

—MAURIZIO TERNI

- 8 MAYAMA, A. Influence of blood of leprosy patients on growth of some bacteria; comparative study with phagocytosis and agglutination. *Sci. Rep. Res. Inst. Tohoku Univ. Series C*, **3** (1951) 113-125.

Strong tuberculo- and typhostatic activities of the blood or serum of leprosy patients were demonstrated *in vitro*. Neither of these activities was influenced by type, clinical condition or state of leprosy, and the findings were also not related to agglutination, tuberculin skin reaction, or erythrocyte sedimentation of the patients. The phagocytic power of leucocytes on tubercle bacilli, irrespective of the clinical condition, was stronger in leprosy patients than in normal persons, whereas the same power on typhoid bacilli was stronger than in normal persons only in the L and not in the Mn cases. Both activities may presumably be brought about as a certain immunological group reaction caused by leprosy infection. It is plausible to think that they may arise by the same process and mechanism as the well-known "polyfixation" of leprosy serum in the complement fixation reaction. —K. KITAMURA

- 8 MAYAMA, A. Influence of the whole blood of rats and domestic fowls inoculated with rat or human leprosy bacilli respectively, on growth of tubercle and typhoid bacilli. *Sci. Rep. Res. Inst. Tohoku Univ. Series C*, **3** (1951) 127-132.

The whole blood of experimental leprosy rats showed a strong tuberculostatic activity, which was related to the time lapse after inoculation as well as to the state of infection. No typhostatic activity was found. On the contrary, the whole blood of domestic fowls previously inoculated with human leprosy bacilli showed hardly any tuberculostatic activity, while it had a strong typhostatic activity, which was influenced not necessarily by the number of previous inoculations but by the state of leprosy changes produced in the viscera. The whole blood of healthy rats and fowl has a tuberculostatic activity, as has the whole blood of healthy human adults.

—K. KITAMURA

- 8 JABONERO, V. and HERMANN, H. Neurohistologische Beobachtungen an der menschlichen Haut bei der Lepra. [Neurohistological observations on the human skin in leprosy.] *Arch. f. Dermat. p. Syph.* **195** (1953) 447-458.

A piece of skin excised from a patient with lepromatous leprosy was serially sectioned and impregnated with silver by Jabonero's method. Pieces of skin of 30 healthy persons served as a control. In leprosy, evidence of severe degeneration of



the fine nerve fibers may be seen. This consists in irregular swellings, lumping together of the single fibers, and fragmentation. The protoplasm surrounding the fine nerve fibers is more vacuolated than normally, and frequently shows considerable variation of texture. The axone cylinders of the medullated fibers show distensions of various forms, or they are decomposed and show alterations of their ability to take up the silver. The nerve sheaths frequently contain vacuoles and granules of various forms which can be stained black with silver. The corresponding cell nuclei often contain lumped chromatin and vacuoles. The Meissner and Pacini corpuscles have completely disappeared. The nerve endings of the hair roots are abnormally altered. The fine nerve fibers around the hair show distension, are flattened, and are frequently detached. The pathologic changes of the nerve system of the skin are not specific for leprosy, since the same alterations are also observed in other diseases of the skin, such as scleroderma. —E. KEIL

SHIMIZU, F. Pathohistological findings of peripheral nerves affected by lepra bacilli as examined under the fluorescent microscopical apparatus (Yasaki). *La Lepro* 22 (1953) 43-44 (in Japanese; English abstract, p. 43).

The fluorescence apparatus (Yasaki) easily revealed many lepra bacilli in 18-to-20-year-old material from the nervus ulnaris of lepra nodosa (60 cases) and lepra nervosa (5 cases). The Ziehl-Neelsen method was of less use here. The histological picture, in general, showed plenty of lepra bacilli in the young leprous granulation where the lepra cells were abundant. Where fibrosis was marked there were fewer bacilli. There were not many in the foci of round-cell infiltration.—[From abstract.]

CHERLINZONI, C. and PIRASTU, E. Aspetti radiografici delle osteo-atropatie leprose. [Radiographical aspects of leprous osteo-arthropathies.] *Chir. Organi Mov.* 37 (1952) 116-133.

A report on 18 cases of osteoarthropathy in leprosy patients with illustrations of the radiological characteristics of the various localizations which show a difference between the specific osteopathies due to direct implantation of Hansen's bacillus in the skeleton and the osteoarthropathies due to an altered neutrotropism. It is concluded that in a large percentage of cases the radiological aspects of leprous osteopathy are sufficiently characteristic to make recognition possible.—[From abstract in *Excerpta Med.* 7 (1953) 160.]

CARO, M. R. and SENEAR, F. E. Reticulohistiocytoma of the skin. *A.M.A. Arch. Derm. & Syph.* 65 (1952) 701-713.

A report of 2 cases of a rare nodular dermatosis having a gross resemblance to the cutaneous nodules frequently seen in patients suffering from diseases of the joints. The few cases hitherto reported have been given various diagnoses from the interpretation of the histopathology. The authors present evidence that the essential cells are of reticuloendothelial origin. One nodule had been injected with a few minims of 1% saccharated iron oxide for vital staining and removed 48 hours later; Perles' prussian blue test showed phagocytosis of the iron by the abundant small histiocytes in the infiltrate, and many of the giant cells showed blue granules in their cytoplasm. Since the lesions are not true neoplasms the condition would be more correctly called reticuloendothelial granuloma, but the original term is employed to avoid confusion. A photograph of the hands of one case might be mistaken for leprosy at first glance, and one of an ear shows many small papules. Photomicrographs show mainly conspicuous "ameboid" giant cells. Leprosy is not mentioned in the differential diagnosis. (This paper is followed by a lengthy discussion, several pages of small type. A later note (*ibid.* 66 (1952) 630) lists 4 reports not cited in this paper, one of them the subject of the following abstract.) —H. W. W.



PORTUGAL, H., FIALHO, F. and MILIANO, A. Histiocytomatosis gigantocitaria generalizada. [Generalized giant-cell histiocytomatosis.] *Rev. argentina Dermatosif.* **28** (1944) 121-144.

Report of a case which, when first seen at the clinic, was taken to be one of leprosy. "The form, color, dimensions, consistency and distribution of the lesions made this mistake inevitable. Any specialist seeing the patient or his photograph would first suspect leprosy. After the histological examination was made, however, the condition was carefully compared with the clinical picture of nodular leprosy. . . ." and various differences were found. The photographs show how readily the lesions could be mistaken for lepromata—superficial small nodulations and larger deep ones of the right face and ear, the forearms, and the abdominal wall. Three photomicrographs show a tissue composed mostly of elongate cells, apparently with some hyaline change, containing large numbers of giant cells.

—H. W. W.

POTTZ, G. E. A simplified procedure for staining acid-fast bacteria in smears and tissue sections. *Bull. Internat. Assoc. Med. Mus.* **28** (1948) 188-191.

Staining solutions said to be equally satisfactory with smears and sections for the staining of tubercle bacilli are given. (1) Carbol-fuchsin: 4 gm. of the crystalline basic dye is dissolved in 25 cc. of 95% alcohol; 12 gm. of crystalline phenol is melted and stirred in; then 25 cc. glycerol is added, and distilled water to make 130 cc. After standing for at least 30 minutes this solution should be passed through a bacterial filter (Seitz or other) "to remove any acid-fast organisms which may be present" [sic]. (2) Decolorize—counterstain: To 110 cc. of a 2% aqueous solution of malachite green add 15 cc. of glacial acetic acid and then 25 cc. of glycerol. This combined solution is used as a time-saver; it is preferred to Gabbet's solution (methylene blue in 25% sulfuric acid), because—for one thing—the latter "leads to. . . destruction of tissue sections." [This statement will perhaps surprise others as much as it does the reviewer.]

—H. W. W.

BRANDT, F. A. and LLOYD, D. L. Differential staining for *M. tuberculosis* and *M. leprae*; a modification of the Ziehl-Neelsen stain. *Lab. Invest.* **3** (1954) 296-302.

After citing several reported methods of staining acid-fast bacilli in tissue sections, the authors consider certain ideas about the principles of acid-fastness without arriving at any conclusion. [The article on the subject by the reviewer, in *American J. Path.* **28** (1952) 157-170, had apparently not been seen.] The technique described is based on that of Pottz [see an accompanying abstract] in which the stain used has more concentrated fuchsin than usual because of the belief that the difficulty lies in insufficient retentive power of the bacilli. Paraffin sections (formalin fixation) are dewaxed with benzene or xylene and then allowed to air-dry thoroughly, after which the carbol-fuchsin is applied. There is nothing unusual about the after-staining treatment—dehydrating (alcohols), clearing (benzene) and mounting coverslips (Canada balsam). Of one lot of 29 histologically lepromatous specimens, the Ziehl-Neelsen technique gave positive results with only 8, while the modified Pottz technique gave 18 positives; 11 specimens therefore remained negative with both. Of another group of 14 specimens from undoubtedly lepromatous cases, 9 were positive with one or the other of these techniques.

—H. W. W.

BERG, J. W. New method for staining mycobacteria in tissue sections. *A.M.A. Arch. Path.* **56** (1953) 650-652.

The author's method is said to permit a more rapid and accurate evaluation of tissue lesions suspected of containing mycobacteria. The identification of *M. tuberculosis* and *M. leprae* in tissue sections is dependent upon the amount of contrast obtainable between the organism and the surrounding material, the counterstain re-



ducing the sensitivity of the acid-fast reaction. A high contrast was obtained by using a reducing acid (formic) in the differentiating acid-alcohol solution. Rapid staining at room temperature was achieved by making carbol-fuchsin solution alkaline. Alcohol-fixed tissue gave better results than did tissues fixed in formalin or Helly's solution. New Fuchsin (C.I. 678) was used. The method is described in detail.

—SR. HILARY ROSS

BERG, J. W. An acid-fast lipid from spermatozoa. *Arch. Path.* **57** (1954) 115-120.

Sperm and mycobacteria have been shown to share the property of acid-fastness. Examination of this staining reaction showed that in sperm, as in lepra bacilli, acid-fastness was not related to cell structure; rather, it was altered only by treatment which also altered the chemical composition of the cells. This type of acid-fastness was the same, qualitatively and quantitatively, as that shown by mycolic and leprosinic acids, two long-chain hydroxy-fatty acids isolated from tubercle and [a supposed culture of] lepra bacilli. These latter acids, obtained from the Yale University School of Medicine, were used as comparisons with the unknown lipid obtained from the sperm. The method of extraction is given in detail. A figure shows the infra-red absorption spectrum of the acid-fast lipid fraction.

—SR. HILARY ROSS

LOWE, J. and McNULTY, F. Tuberculosis and leprosy. Immunological studies. *Leprosy Rev.* **24** (1953) 61-90; also, *British Med. J.* **2** (1953) 579-584.

This long and important paper is a careful study of the nature and relationship of immunity to tuberculosis and leprosy, and of the hypothesis that a cross-immunity exists between the two diseases. (A) First, with regard to the nature of the positive response to the lepromin test, the writers hold that both the early, tuberculin type of reaction (Fernandez phenomenon) and the late nodular reaction (Mitsuda phenomenon) are allergic but nonspecific. Lepromin-negative healthy persons can become positive as a result of exposure to leprosy, or of infection with other acid-fast bacilli; yet when leprosy has once developed the result of the test remains remarkably persistent. Lepromin-negative cases tend to remain negative even after the disease has disappeared, and lepromin-positive cases remain positive. The two main forms of leprosy, the allergic (tuberculoid) and the anergic (lepromatous), appear to represent two widely differing ways in which the body may react to leprosy infection, the form of the disease being determined by the state of the body existing at the time of infection or developing early in response to that infection, this allergy or anergy usually persisting indefinitely. The tuberculin test on the other hand, which is generally held to be specific for tuberculous infection, tends to vary from time to time. After complete eradication of tuberculous infection a positive reaction may slowly become negative, and on reinfection it becomes positive again. The positive reaction induced by BCG vaccination is often short-lived, and to maintain positivity repeated vaccination is often necessary.

(B) The writers next deal with studies of the tuberculin and lepromin reactions in healthy persons made by themselves and others. The findings all indicate that the two tests are not independent, but that there is some factor operating strongly to make them agree. Four possibilities are: (1) that previous exposure to leprosy makes persons allergic to both; (2) that there had been exposure to both infections; (3) that exposure to some other acid-fast bacillus makes people allergic to both; or (4) that exposure to tuberculosis makes people allergic to leprosy. Because many of the tests have been done in countries where leprosy was rare or unknown and tuberculosis is present, the first two alternatives are ruled out. The evidence points to the possibility of previous tuberculous exposure tending to make persons allergic to leprosy. Next, regarding the effect of BCG vaccination on the lepromin and tuberculin reactions in healthy persons, most negative reactors (tuberculin and lepromin) so treated



become positive, whether the vaccine is given orally or intradermally. The tuberculin conversions were more numerous but less permanent than the lepromin conversions. As practically all persons who are lepromin positive either remain free from the disease or develop it only in the mild, self-limiting form, suggesting immunity to leprosy, the question arises if lepromin positivity produced by response to tuberculous infection or to BCG vaccination also indicates immunity? In the belief that that is the case, BCG vaccination is now being recommended and used in the prophylaxis of leprosy in certain areas. On the other hand, some workers believe that a few persons are inherently incapable of reacting allergically to leprosy and that these persons if exposed to leprosy infection become infected and develop the infectious lepromatous form. If this be true, then BCG vaccine only immunizes those who are already potentially allergic (the majority), and does not immunize those who are inherently susceptible and who most need immunization. The next question asked is, If tuberculosis immunizes against leprosy, might we not expect all cases of leprosy to be lepromin negative, indicating that immunity has not been conferred by previous tuberculous infection? The mild, self-limiting forms of leprosy in which the lepromin reaction is positive might be expected to be tuberculin-positive, while the severe, progressive, lepromin-negative cases should be also tuberculin-negative; but this is not so. Lepromin-negative cases of leprosy show a positive tuberculin rate little lower than the general community, but as high as or higher than the tuberculoid leprosy cases in the same area. Moreover, they frequently show tuberculous infection, and not infrequently they die of it. It is therefore considered that with such conflicting and contradictory evidence, and until fully controlled experiments are done, BCG vaccination should not be used indiscriminately, and that where it is used every possible step should be taken to prevent or minimize contact between open cases of leprosy and healthy persons, particularly children.

(C) Finally, in a study of the lepromin and tuberculin reactions in leprosy, the results gave no evidence of cross immunity between the two infections. This was in marked contrast to the findings in healthy persons. After BCG vaccination the tuberculin conversions were about the same as in healthy persons, and were seen in both tuberculoid and lepromatous cases. In lepromatous cases there were definite lepromin conversions in 10%, and slight reactivity in a further 32.7%. These findings were unexpected, as lepromatous patients are usually persistently negative. In tuberculoid cases—already lepromin positive—BCG vaccination did not induce any marked increase in the response to lepromin. The vaccination did not produce any focal reaction in leprosy lesions. It did not induce any accelerated clinical improvement in lepromatous cases that were rendered lepromin positive, and there is no definite indication that BCG vaccination is likely to play any part in the treatment of leprosy.

—G. O. TEICHMANN

DE MENEZES, D. Lepromino-reação em doentes e comunicantes de lepra no Município de Uruguaiana (Rio G. do Sul). (Observação de 4 casos de viragem do Mitsuda pelo BCG.) [The lepromin reaction in leprosy patients and contacts in the Municipality of Uruguaiana, Rio Grande do Sul. (Observation of 4 cases of conversion of the Mitsuda reaction by means of BCG.)] *Rev. brasileira Leprol.* **21** (1953) 195-202.

A report is presented of the results of the Mitsuda reaction in 23 leprosy patients and 66 contacts. [Percentages of positive reactions and of bacteriological findings are given by type, but with so very few cases such data are worthless.] Of the entire group of patients, 88.3% gave positive reactions, while the contacts were 94% positive. Probably because of BCG vaccination, children gave a slightly higher positive rate (94.8%) than adults (93.5%). Not one of the 6,316 children who had received BCG had developed leprosy, in spite of the prevalence rate of more than 1:1,000. There



was no case of infantile leprosy in the municipality; the youngest patient was 14 years old, a minor not given BCG. For the past 14 years the health unit of Uruguaiana has been carrying out BCG vaccination. The contacts of lepromatous cases were only 88.6% lepromin positive, in contrast with the contacts of the other forms of leprosy, in whom 100% was reached. This suggests that frequent contact with infectious patients may lead to diminution of resistance. This is further corroborated in patients segregated in leprosaria, there being recorded cases of change from lepromin positivity to negativity, obviously resulting from constant superinfection. Data are given of a tuberculoid case which was Mitsuda negative on two occasions a year apart, but which became positive after receiving BCG.—[From author's summary.]

SALOMÃO, A. and FERREIRA, D. L. Influência favorável do B.C.G. na evidência da reação de Mitsuda em crianças abaixo de 3 anos de idade na Pupileira "Ernani Agrícola." [Favorable influence of BCG on the Mitsuda reaction in children under 3 years of age in the Ernani Agrícola Nursery.] *Arq. mineiros Leprol.* **13** (1953) 54-58.

The authors gave BCG by mouth to 26 children, 4 to 36 months old, who had been born in the Santa Isabel Colony and removed at birth. They were tested with tuberculin, and all were negative. Abreugraphy was normal in all the cases. Tests made after the BCG treatment showed that whereas only 53.8% had become tuberculin positive, 100% were lepromin positive. It is pointed out that, after BCG, reactivity to lepromin is more general than to tuberculin under the same conditions. —O. DINIZ

FONTES MAGARÃO, M. and DE OLIVEIRA LIMA, S. Reação de prognóstico da tuberculose pulmonar em hansenosos-tuberculosos. [A prognostic reaction for pulmonary tuberculosis in tuberculous leprosy patients.] *Rev. brasileira tuberc.* **21** (1953) 295-301.

The test consists of an intradermal injection of 400,000 BCG organisms. A positive papule measures about 8 mm. in diameter. Readings should be made after from four to six weeks; when nodules develop after the third week, the result is considered positive. The procedure was tried in 50 patients, 44 of whom had both leprosy and tuberculosis. All had been previously subjected to a Pirquet tuberculin test, the reaction to which did not interfere with nodule formation following the BCG test. The type of leprosy did not influence the results, nodules developing in 76% of tuberculoid cases and 61% of lepromatous ones. The former seem more resistant to tuberculosis. A 15-month study of the course of the tuberculosis in the 44 patients showed a marked difference between reactors and nonreactors to BCG. The course was favorable in 29 of the 32 cases in which no nodules developed after the injection. On the other hand, the outcome was unfavorable in all of the 12 positive patients; 3 died, 4 continued to progress, and 5 remained unchanged.—[From abstract in *American Rev. Tuberc.* **69** (1954) 34.]

FLOCH, H. and SOHIER, R. Sur l'intérêt de la réaction d'hémagglutination à divers antigènes tuberculeux dans la maladie de Hansen. [The hemagglutination reaction with different tuberculosis antigens in Hansen's disease.] *Inst. Pasteur Guyane et Terr. Inini*, Publ. No. 272, 1952, Sept.

The authors have applied the Middlebrook-Dubos method to leprosy sera using 4 different antigens: precipitated tuberculin from the Institut Pasteur (74 sera), tuberculin I.P.48 (81 sera), precipitated tuberculin J.51 (14 sera), and Bourdillon's bacillus extract (20 sera). The results seem not encouraging, which is in striking contrast with the report of certain other workers. They found the reaction much less frequently positive in the indeterminate cases (19%) and tuberculoid cases (27%) than in the lepromatous ones (65%). It seems that in leprosy this reaction has only a prognostic value; its negativity and its negativization are favorable; thus it may



be of interest as a control in treatment. Positive reactions seem to depend largely upon the antigen employed. A French bacillus extract (precipitated tuberculin I.P.48) seems definitely more sensitive than the "precipitated tuberculin" of the Institut Pasteur of Paris. A bacillus extract of American origin (Bourdillon, Albany) seems even less sensitive. Another precipitated tuberculin (J.51) also gave definitely inferior results to those obtained with the I.P.48 tuberculin. This simply confirms, perhaps, that if there are undeniable antigenic relationships between the Hansen and Koch bacilli, the analogies between the bacillus extracts of the former and tuberculin are more slight than those existing between the bacillus extracts of the two germs. When we wish to compare the reactions of immunity or allergy in leprosy and in tuberculosis, it seems logical that we should use bacillus extracts, and not the bacillary antigen of Mitsuda on the one hand and tuberculin on the other hand.

—AUTHORS' ABSTRACT

KAWAGUCHI, Y. Hemagglutination test of tuberculin sensitized red cells in leprosy. *La Lepro* 22 (1953) 59-62 (in Japanese; English abstract p. 59).

— Hemagglutination test of tuberculin sensitized red cells in erythema nodosum leprosum. *Ibid.* 63-68 (English abstract, p. 63).

— Hemagglutination test of tuberculin-sensitized red cells in leprosy. Report III. On the study of fluctuation of hemagglutination titres. *Ibid.* 307-315 (English abstract p. 307).

(1) The author applied this test to 153 specimens of leprosy serum, with 78.9% positive reactions—88.3% in lepra tuberosa and 66.0% in lepra nervosa. The test applied to the sera of tuberculosis and other patients as controls gave 90% positive in tuberculosis, but was negative in most of the other specimens.

(2) Using sera of patients with erythema nodosum leprosum, high agglutination titers were not always obtained in all periods of the condition. Typically, the maximum titer usually occurred a few days after the temperature had fallen. In atypical cases, the maximum titer usually occurred between the 7th and 14th day, but the titer curve was irregular.

(3) The test was applied to the sera of 24 leprosy patients at intervals for a year. Sera from the nodular cases, which did not show any remarkable change in their clinical course, maintained almost the same titer during this period. In some cases of macular leprosy, the titers showed remarkable fluctuations from time to time, although no noticeable changes occurred in their clinical symptoms.—[From abstracts.]

ROMANCI, C. A. Sul comportamento della reazione sierologica universale nei lebbrosi. [Variations of the universal serological test in cases of leprosy.] *Igiene mod.* 45 (1952) 163-171.

Variations in the precipitation curves of Kahn's test, carried out at an interval of one year, may be attributed to the clinical course of the disease, particularly in nodular leprosy.—[From abstract from *Excerpta Med.* 7 (1953) 266.]

GOLLERKERI, P. B., GOKHALE, B. B. and RANADE, S. N. Some observations on the behaviour of the Wassermann and Kahn test (S.T.S.) in leprosy and tuberculosis. *Indian J. Med. Sci.* 6 (1952) 357-363.

Two possible hypotheses to explain the so-called "false positives" in nonsyphilitic cases of leprosy and tuberculosis are put forward: (1) a disturbance of the albumin/globulin ratio; (2) an excess of lipid, connected with the lipid-containing sheaths of the lepra and tubercle bacilli, which develops a lipid-specific antibody which adds up with the globulin antibody to give positive reactions as in syphilis. Of 285 cases of clinical leprosy, 71 (24.9%) gave positive reactions with one or the other test, or with both. Positive results were more common in cases with high bacteriological findings and negative lepromin reactions. In 17 cases of active pulmonary tuberculosis,



without either leprosy or syphilis, there were 8 with positive findings. In 9 cases of tuberculous meningitis the spinal fluids were all Wassermann negative, while of 24 similar tests on the cerebrospinal fluid in leprosy cases in which blood tests were positive, 6 gave positive results and 1 was doubtful. Three of these 7 patients gave no clinical history of syphilis.—[From abstract in *Trop. Dis. Bull.* 49 (1952) 1049.]

NARULA, R. N. and GUPTA, V. P. A study on the behaviour of leprosy in serological tests for syphilis. *Bull. World Health Org.* 9 (1953) 877-880.

Sera from 58 inmates of a leprosy home in Palampur, Punjab, were tested by a modified Meinicke (MKIR) and by the VDRL slide tests. The latter was used with sera normally inactivated, and also with sera "overheated" to 65°C for 5 minutes, Kvittingen having observed that that treatment would do away with most false positives with that test. The table shows that the MKIR test gave fewer positive reactions than the normal VDRL test, but that the figures with the latter test agreed exactly with those of the former one when the sera had been "overheated." It also shows that among patients with no clinical evidence of syphilis, there were no positives with the MKIR test or the VDRL test with overheated sera. It is speculated that the lessening of false positives may be due to removal of the factor by the strong (3.5%) NaCl used in the MKIR test, and by overheating the serum for the VDRL test.—H. W. W.

MILLER, J. L., SLATKIN, M. H., BRODEY, M., WECHSLER, H. L. and HILL, J. H. Studies with the treponemal immobilizing test. *J. American Med. Assoc.* 154 (1954) 1241-1247.

This report, from the Department of Dermatology, College of Physicians and Surgeons, Columbia University, the Presbyterian Hospital, and the Vanderbilt Clinic, New York, is of a study with this complicated, difficult but reliable test for syphilis in a large but unstated number of cases, of which 231 had syphilis in one form or another, while 68 of the nonsyphilitics gave biologically false positive reactions with ordinary serological tests. It is reported here as a noteworthy report for comparison with others involving sera from leprosy patients. The conclusions are as follows: 1. The treponemal immobilizing test is a practical means of differentiating biologically false positive reactions from true positive reactions indicative of syphilis. 2. The concept of the significance of weakly positive and positive serologic tests in the absence of signs or history of signs of syphilis must be revised in the light of evidence gained from the results of the treponemal immobilizing test. 3. The treponemal immobilizing test in the spinal fluid is of value in the diagnosis of neurosyphilis in patients in whom the spinal fluid serologic test has become negative as the result of the passage of time or treatment. 4. In acute disseminated lupus erythematosus positive serologic tests represent biologically false positive reactions in a high percentage of cases. 5. Little evidence for the recurrence of biologically false positive reactions was found in sarcoidosis. 6. Passive transfer of the immobilizing antibody across the placenta occurs in nonsyphilitic babies born of syphilitic mothers. 7. In passive transfer, the immobilizing antibody persists up to six months, whereas reagin disappears before three months. —H. W. W.

TARSHIS, M. S. and FRISCH, A. W. Chromogenic acid-fast bacilli from human sources.

I. Cultural studies. *American Rev. Tuberc.* 65 (1952) 278-288.

————— Idem. II. Pathologic studies. *Ibid.*, pp. 289-301.

————— Idem. III. Hypersensitivity studies. *Ibid.*, pp. 302-315.

(1) Cultures of 26 strains of chromogenic acid-fast bacilli isolated from tuberculosis patients or suspects were studied, and as controls 3 strains of tubercle bacilli (2 human variants and BCG) and 5 of known saprophytes, *M. phlei*, *M. smegmatis* and *M. butyricum*. Brief notes on morphology and staining are given. In general, although the chromogens varied markedly among themselves, they resembled tubercle bacilli in



that they grew best on standard media for that microorganism, whereas the saprophytes were unselective and grew rapidly and luxuriantly on all of the media used. [The term "paratubercle bacillus" is not found, except in two of the titles referred to in the following articles. The French literature on that subject is not dealt with, except for one article by Calmette (who used the term mentioned) which appeared in an American periodical.]

(2) In guinea-pigs given intraperitoneal inoculations of large amounts (25 mgm.), 7 of the chromogens produced progressive fatal disease, 12 others caused demonstrable lesions which showed a manifest tendency to heal, while the remaining 7 showed little or no evidence of pathogenicity. The saprophytes failed to produce any lesions. Similar lesions were found in white Swiss mice and rabbits inoculated with certain of the chromogens. With smaller inocula in guinea-pigs (10 mgm. or less) the fatality rates and extent of lesions were greatly reduced. On the whole, the involvement was subserosal rather than parenchymal.

(3) All of the chromogens were studied for ability to sensitize guinea-pigs to PPD, and several were tested using homologous and heterologous tuberculin and homologous bacterial suspensions. A majority of the animals given the large inoculation (25 mgm.) developed some degree of sensitivity to PPD (1+ or 2+ on a 4+ scale), with a rough correlation with pathogenicity; a 1.0 mgm. dose had much less effect, and the positive reactions were more transient. Animals inoculated similarly with the saprophytes showed no sensitization to PPD. In one experiment 9 animals were inoculated with that number of the chromogens which produced macroscopic lesions but not death, and 7 with the strains that did not produce such lesions, and weekly skin tests were made with homologous tuberculin and bacillus suspensions. The latter antigens gave the larger number of positive reactions until the fifth week, when the two became parallel; PPD caused 1+ reactions in one-half of the animals after 2 weeks but almost none thereafter. The reactions in the first group, toward the end, were on the whole stronger than in the second group. Another experiment with the 2 most pathogenic strains (10 mgm. inocula) gave comparable results. Of animals infected with tuberculosis, few of those which were negative to PPD responded to any of 16 chromogen tuberculin used, whereas all but 2 of those antigens caused reactions—4 of them 2+—in the PPD-positive animals. In a final experiment, inoculations were made with 11 chromogens and the virulent tubercle bacillus (1.0 mgm.) and all 12 animals were cross-tested with all of the corresponding tuberculin after 7 weeks. Two of the chromogen animals were totally unresponsive; all others, including the H37Rv animal, responded to most (7 to 10) of the antigens besides the homologous ones. In no case, except with the H37Rv animal, did the homologous antigen cause a stronger reaction than did one or more of the heterologous ones. It is concluded that the chromogens and the tubercle bacillus share antigenic properties in common and that the former appear to occupy a position midway between the mammalian and saprophytic groups of mycobacteria. [In none of the individual experiments were all of the 26 chromogens used, and in only one of them was more than one animal used for each strain to check on individual variability of response.]

—H. W. W.

BUHLER, V. and POLLAK, A. Human infection with atypical acid-fast organisms; report of two cases with pathologic findings. *American J. Clin. Path.* **23** (1953) 363-373.

This is a report on an atypical acid-fast bacillus repeatedly isolated from exudates and visceral lesions of two clinical cases seen in Kansas City, of which it was evidently the causal agent. The first patient was hospitalized first in 1948 for supposed pulmonary tuberculosis, and a lobectomy was done in 1951 after which he improved and returned to part-time work. The "yellow bacillus" was isolated repeatedly during this period, and also from the excised tissue, the histopathology of which is



described. The second patient, hospitalized in July 1950, developed a draining sinus after removal of an enlarged inguinal lymph node, and the same bacillus was cultured from the exudate. Antituberculosis treatment (dihydrostreptomycin) was completely ineffective in this case, and the patient died in December 1950. Lesions were found in the spleen, mesenteric lymph nodes and other viscera, and the bacillus was recovered from them. The cultural characteristics of this microorganism are described. In guinea-pigs and mice it is pathogenic in low degree. It is regarded as uncertain whether it is a true mycobacterium. Also, briefly, are given the characteristics of a somewhat similar but different "orange bacillus" that has been recovered from numerous patients with disease resembling tuberculosis. The significance of this microorganism has not yet been established.

[Inquiry of the authors elicited the information, first, that sulfone treatment of such cases has not been tried; and, second, that the ineffectiveness of streptomycin in Case 2 was probably due to a period of treatment with that drug by another physician several months prior to admission. *In vitro* the strain from this patient proved highly resistant to streptomycin, whereas the strain from Case 1 was sensitive to the drug, as were those recovered from other cases.]

—H. W. W

LANDAU, J., BACHRACH, U. and GUREVITCH, J. The bacterial flora of the conjunctiva of leprous patients. *Acta Med. Orient.* **12** (1953) 226-229.

The bacterial flora of the conjunctivae of 54 leprous patients of the Hospital for Hansen's Disease in Jerusalem was examined by cultures during three different seasons. Only patients without active signs of conjunctival inflammation were studied. The predominant microorganisms found were *Staphylococcus albus* and *Corynebacterium pseudodiphtheriticum*, although other various other species were cultivated. With these two species, variations in the seasonal frequency were observed. Except for several bacteria of the Enterobacteriaceae, the types of microorganisms and their frequency in these patients were very similar to those in healthy individuals.

—F. SAGHER

AOKI, S. and AKITA, T. Studies on the variations of human-type tubercle bacilli. *Iryo (Tokyo)* **6** (1952) 8-12 (with English abstract).

——— The agglutination test by the mutated strains of human type tubercle bacilli in tuberculosis. *Ibid.* **6** (1952) 13-18 (with English abstract).

——— Bacteriologic studies on the mutated strains of human type tubercle bacilli. *Ibid.* **7** (1953) 9-14 (with English abstract).

1. In culture media containing, variously, rodealin or growth-inhibitory agents such as TB-1, PAS, streptomycin, etc., there were obtained from the H strain of the tubercle bacillus nonacid-fast and gram-negative mutants some of which produced pigment while others did not. Certain strains were temporarily acid-fast and gram-positive in the early stages of mutation. The mutants could be converted back to the original strain.

2. The sources of the 123 sera used are stated in the abstract, and the titers obtained in the sera from the different source conditions (pulmonary and nonpulmonary tuberculosis, nontuberculous diseases and controls), but no mention is made of what strains of mutants were used or whether any control cultures (ordinary tubercle bacilli or others), were employed.

3. The findings with 25 strains of mutants with respect to morphology and staining, culture characteristics, colony morphology, etc., are summarized. Among other things, they were nonacid-fast and gram-negative, most strains showing one or more deep blue granules after Ziehl-Neelsen; capable of growth on ordinary media, but best on those designed for the tubercle bacillus; colonies smooth, shiny, and in consistency soft to tenacious; one group (T1) white to grayish-white, another (T2) red to purple



red, and a third (T3) lemon-yellow to orange. The identification is difficult, but—it is stated—in view of the fact that tubercle bacilli may have a cycle of mutation of their own they can be differentiated from so-called nonpathogenic acid-fast bacilli.

—H. W. W.

YASUMOTO, K. Supplemental studies on the morphology and staining properties of acid-fast bacilli. Report I. Observations on the nonacid-fast type of initial microcolonies of acid-fast bacilli. *La Lepro* 22 (1953) 1-11 (in Japanese; English abst. p. 1).

———. Idem. Report II. On the granules of acid-fast bacilli observed by various procedures. *Ibid.* 12-17 (abstract p. 12).

———. Idem. Report III. The effect of tibione, PAS and streptomycin on the morphology of *Myc. tuberculosis*. *Ibid.* 85-91 (abstract p. 85).

(1) In studies on the initial developmental forms and staining properties of acid-fast bacilli, especially tubercle bacilli, the author observed developmental forms which corresponded with those reported by many investigators. Splitting, branching and budding forms were recognized. It seemed that there was not always a clear parallel between the staining properties and the degree of acid-fastness of acid-fast bacilli. The frequency of the so-called nonacid-fast type of acid-fast bacilli, especially of tubercle bacilli, was not only due to the degree of the acid-fast property of the strains studied, but also to their developmental stages, states, and circumstances.

(2) The small bodies or granules observed at the two poles of unstained acid-fast bacilli seem to be different from those seen in the central part. The bipolar granules demonstrated by the tellurite reaction method, the oxidation method, and the staining methods of Giemsa, Ziehl-Neelsen, and Ziehl-Haidenhain, seem to be all the same, and the same as a part of the granules observed in the unstained or Gram's staining specimens. The Fontes granules seem to be different from the Ziehl granules, because of the places and states in which they appear in the acid-fast bacterial bodies. The appearing states of the granules which show positive Feulgen's reaction in the bacterial bodies somewhat resemble those of the Ziehl's and Fontes' granules but with reference to the existing part Feulgen's granules seem to resemble or correspond with the granules existing in the central part of the bacterial bodies.—[This last sentence not edited.]

(3) Tibione inhibited continuously the growth of elongation forms of avian tubercle bacilli from the early growth phase, and PAS did so later and temporarily, but streptomycin acted selectively on only the growth of the fission-forms. Therefore, with streptomycin the rods seem to become more and more elongated. Tibione seems to act directly on avian tubercle bacilli and to provoke not only constriction of rods and decrease of their staining properties, but a change in the number and arrangement of their granules, and varied forms of bacillary bodies. PAS seems to act similarly, and to provoke rather marked changes of the bacillary bodies and their granules. Streptomycin seems to cause a remarkable elongation of rods, followed by increase of their granules.—[From abstracts.]

BABA, M. Studies on the influence of TB-1 on the length, the numbers of granule and K. F. of tuberculous bacilli. *Iryo (Tokyo)* 7 (1953) 15-19 (with English abstract).

In culture media containing TB-1, the bacilli become shorter, with increase of granules and lessening of K.F. [resistance of acid-fastness to heating?], these changes being in proportion to the concentration of the drug. In treated patients, there was at first some shortening but later a tendency to elongation, increase of granules without exception, but only slight decrease of K.F.

—H. W. W.



- NAKAMURA, M. and SHINGU, M. On the susceptibility of young mice and hamsters to the murine leprosy bacillus and the influence of hyaluronidase upon the onset of murine leprosy. *La Lepro* **22** (1953) 97-101 (in Japanese; English abstract p. 97).

The susceptibility of young mice to the murine leprosy bacillus seems not so marked as that of adult mice. The infection is easy to produce in hamsters. The subcutaneous or intracerebral inoculation of the murine bacillus mixed with hyaluronidase gives rise to a wider distribution of the organisms.—[From abstract.]

- NAKAMURA, M., KANDA, Y. and SHINGU, M. The influence of other kinds of bacilli and acid-fasts deprived of the acid-resistance upon the initiation of murine leprosy. *La Lepro* **22** (1953) 93-96 (in Japanese; English abstract, p. 93).

*Bacillus subtilis*, *B. prodigiosus*, *B. proteus vulgaris*, *B. pyocyaneus*, *Bacterium typhosum*, *Corynebacterium diphtheriae* and *Vibrio cholerae* co-inoculated subcutaneously or intraperitoneally have no influence upon the onset of murine leprosy in white rats. On the other hand, the initiation of the disease is inhibited after inoculation with the murine leprosy bacillus in animals prepared with the human or avian tubercle bacillus deprived of acid-resistance, or with bone charcoal.—[From abstract.]

- KAWAGUCHI, Y. Hyaluronidase in rat leprosy. *La Lepro* **22** (1953) 23-27 (in Japanese; English abstract p. 23).

1. Rat leprosy bacilli were injected intracutaneously into white rats: (a) together with hyaluronidase; (b) following hyaluronidase injected into the same sites one hour before; (c) without hyaluronidase (control). No effects of hyaluronidase were seen in this experiment. 2. Rat leprosy bacilli were injected subcutaneously into white rats, alone and with hyaluronidase. Hyaluronidase accelerated the development of the granuloma in this experiment.—[From abstract.]

- CHAUSSINAND, R., VIETTE, M. and KRUG, O. Action de l'hydrazide de l'acide isonicotinique sur le rat infecté par le bacille de Stefansky. [Action of the isonicotinic acid hydrazide in rats infected with Stefansky bacilli.] *Ann. Inst. Pasteur* **84** (1953) 431-434.

Forty-five rats inoculated subcutaneously with suspensions of Stefansky bacilli of varying richness were treated for from 5½ to 6 months with 7.5 to 10 mgm. of INH per kgm. of body weight, by means of a buccal catheter. The treatment was instituted from 24 hours to 17 days after the inoculation. While the controls presented local lesions and dissemination by the lymphatic route in the normal course of time, none of the treated animals showed clinical lesions. In the treated rats that were sacrificed, no bacilli were found in the tissue smears or in the histological sections, except at the site of injection and in the satellite lymph nodes; they seemed to be in quantities proportional to the richness of the inoculation suspensions. However, it is impossible to say if these bacilli were living or not, and the experiment is being continued in the surviving rats.

—AUTHOR'S ABSTRACT

- MUDROW-REICHENOW, L. Die Wirkung von Neoteben (Isonicotinsäurehydrazid) auf den Erreger der Rattenlepra. [The effect of Neoteben (isonicotinic acid hydrazid) on the causative organism of rat leprosy.] *Ztschr. Tropenmed.* **5** (1954) 218.

Ninety-six golden hamsters were inoculated intranasally with a rat leproma suspension rich in Stefansky's bacilli, a method which always produces an almost uninhibited growth of the bacilli in the lung of the animal. When the animals were treated for three weeks with Neoteben given orally, 15 or 30 mgm./kgm., the bacillus counts were reduced in comparison with the control animals, but the over-all effect on the pulmonary infection was not significant. With six weeks of treatment with the same dosage slightly better results were achieved. A similar experiment in rats showed



clearer results in the reduction of the bacilli count in the lung, but here also the results were not clear-cut. Significant results were seen in rats after subcutaneous injection of the leproma suspension into the groin. In no case, however, was complete healing achieved, only a temporary inhibition of growth of the lepromas. The lepromas in treated rats were only one third to one fifth as large as in the controls. "The prognostic value of the rat leprosy test has been somewhat diminished by these results with INH."

—E. KEIL

TAKAYAMA, Y. and YASUMOTO, K. The therapeutic effects of streptomycin, tibione, PAS, promin and cepharanthin, especially of their combination on the rat leprosy. Studies on rat leprosy. *La Lepro* **22** (1953) 18-22 (in Japanese; English abstract p. 18).

Evaluating the therapeutic effectiveness on rat leprosy of the agents used on the basis of the degree of enlargement of the leproma and the dissemination of the bacilli into tissues, it appeared the most activity for streptomycin and better for promin [meaning better than tibione?]. On the other hand, within the limited scope of our experience, the administration of PAS, tibione and cepharanthin did not show any significant therapeutic effect. The inhibitory effect of streptomycin in combination with promin proved to be inferior to that of either drug used alone. Furthermore, when streptomycin or promin was used together with PAS, tibione and [or?] cepharanthin, the drugs acted antagonistically to each other.—[From abstract.]

VIETTE, M. Réaction de Middlebrook-Dubos chez le rat infecté par le bacille de Stefansky avec un antigène extrait du bacille de Koch. [The Middlebrook-Dubos test with an antigen extracted from Koch bacilli, in rats infected with Stefansky bacilli.] *Ann. Inst. Pasteur* **84** (1953) 434-436.

The Middlebrook-Dubos hemagglutination test was performed, using sheep cells sensitized by the *polysidique* [sic] antigen of the Koch bacillus, with 18 rats inoculated subcutaneously with Stefansky bacilli from 2 to 6½ months previously. The reaction was positive, with titers ranging from 1:2 to 1:16, in 15 inoculated rats and negative in the other 3; it was negative in all of 10 new rats. The titer of the reaction seemed variable in rats of the same lot, irrespective of the date of inoculation.

—AUTHOR'S ABSTRACT