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.


The author, who has a thorough knowledge of Hebrew, studied the question of whether leprosy can be recognized with a reasonable degree of certainty from the biblical description of “Zaraath.” One diagnostic criterion, according to the original text, is the presence of white hairs together with an apparent depression of the skin, signs which are not characteristic of leprosy. Other symptoms described include an eruption of “beharoth,” possibly meaning white or shining spots. The priest had to see the patient after a week, and after this period of observation he had to decide if the eruption was spreading. Leprosy, however, would rarely show any significant changes in a week’s time. No mention is made in the Bible of the typical signs of the disease, such as the leonine face, loss of sensitivity, blindness, mutilations, etc. The word “Zaraath” was translated as “leprosy” in the Septuagint about 200 BC. From the Septuagint the translation passed into the Vulgate and then into other Bible translations. At the time of the Septuagint the Greek word “lepra” indicated a scaling skin disease of not much importance, such as perhaps psoriasis. Leprosy was not known in Greece at that time, and was only later described as elephantiasis by Celsus. It seems probable that it was not known in biblical times. Its symptoms are so characteristic, even for laymen, that it is remarkable that the striking features should not have been mentioned.

—F. SAGHER


This is a brief account, by one of the most notable men of our time, of the establishment of the hospital at Lambaréné, French Equatorial Africa to provide for work for which he gave up a career in the ministry, became a physician, and went to Africa in 1913. The author is interested in leprosy, but if the impression has been gained that his work is primarily concerned with that disease that is incorrect; it is evidently a secondary feature of it. He was one of the first in Africa to employ the sulfones (diasone and promin), sent him by friends, and after he had applied them with favorable results (a “miracle”) to a native evangelist with advanced leprosy, other patients began coming to his hospital in increasing numbers. He settled them in a village of bamboo huts which he built on a hill in the nearby jungle, where they were given daily treatments by a physician and a nurse. These huts were only temporary, and buildings of a more substantial nature are being constructed. Some details of the operation of this village are given, but how many patients there are is not said. [Dr. Schweitzer recently—January 14, 1955—celebrated his 80th birthday.]

—H. W. W.

GOMES, J. M. A lepra é um problema internacional. [Leprosy is an international problem.] Rev. brasileira Leprol. 21 (1958) 69-77.

A shaded map is given showing the prevalence of leprosy in the various countries of South America, each of which is considered in some detail. The stated rates per 1000 are: French Guiana, 25; Dutch Guiana, about 2; British Guiana, 2.27; Venezuela, 0.75; Colombia, about 2; Peru, 0.28; Bolivia, 0.42; Paraguay, 2; Argentina,

This report covers a six-months survey made by the author in 1952 at the invitation of the Netherlands New Guinea authorities as part of the South Pacific Commission's leprosy project. The work was done in close cooperation with Dr. Dirk L. Leiker of the health department of the local government. The latter subsequently spent a month at the Makogai hospital in Fiji, and has been a full-time government leprologist for the region, as recommended by the author. The substance of the present report, brought rather more up to date, appeared as an article by Leiker and Sloan in THE JOURNAL 22 (1954) 431-439.

—H. W. W.

SLOAN, N. R. Leprosy in the Trust Territory of the Pacific Islands. South Pacific Commission; Technical Paper No. 57; Noumea, New Caledonia, April 1954; mimeographed, 23 pp., 2/- sterling.

This report is of a three-months survey, ending early in 1953, made in continuation of the South Pacific Commission's leprosy project at the invitation of the Trust Territory administration. Guam, previously investigated [and not a part of the Trust Territory] was not included in the invitation. The work was done in collaboration with Dr. John Valentine, in charge of the territorial leprosarium on Tinian. The region, some 3 million square miles of ocean with 2,141 tropical islands which total only 687 square miles in area, with about 55,000 people, is divided into six districts: the Northern Marianas (Saipan district), the Carolines (Palau, Yap, Truk and Ponape districts), and the Marshalls (a district). The Japanese had established small leprosaria, long since abandoned, on Yap (Pikel Island, 1925), the Marshalls (Ele Island, 1927), and the Palaus (Ngurur Island, 1929); [THE JOURNAL 21 (1953) 380-383]. The survey began with the patients at the Tinian leprosarium and went elsewhere from there, one purpose being to locate a suitable site (or sites) for the leprosarium when it is moved from Tinian, as is to be done. The coverage was very sketchy, because of exigencies of time and transportation, but 4,924 people and 223 cases of leprosy, active or arrested, were seen; 20 other known arrested cases were not seen. These figures would give a known prevalence of 4.4 per thousand. Of the 223 cases, 48 were or had been lepromatous, 175 tuberculoid or indeterminate; 150 were old and 73 newly found in the survey (64 of them nonlepromatous); 137 were males and 86 were females. On the whole the disease appeared to be relatively mild, with strikingly low figures for the lepromatous form and for infected children. It is recommended among other things that leprosaria for open cases be established on Yap and Ponape—these being the main leprosy centers—near to the district hospitals and their facilities, and that the closed cases be treated as outpatients.

—H. W. W.


Two sections of this lengthy article have been supplied by the author in typescript. One, entitled "leprosy in children," describes in detail the establishment and development of l'Ecole Marchoux, in Cayenne, to provide for children with non-contagious forms of leprosy removed from the ordinary schools. A point given emphasis is that, whereas some children became lepromatous each year and had to be sent away while chaulmoogra was being used, not a single one has become lepro-
matous since the sulfones (mainly DDS) have been used. Here is a “prophylaxis” of such cases against becoming of the malignant form. Discussion of the principles involved follows the statement of the following question: “If these children are contagious would it not be more logical to isolate them completely? If they are not contagious is it useful and proper to exclude them from the public schools? Why permit them to go out in the afternoon and during vacations, often to remain in contact with contagious cases? The justification cannot well be summarized briefly. The other section of this article has to do with the different elements of the antileprosy campaign. [A news item in this issue has to do with that subject.] —H. W. W.


Apart from data from the antileprosy dispensary of the Institut Pasteur and from its chaulmoogra laboratory, the principal information about leprosy is a brief statement concerning observations of Lajuide and Destombes on the frequency of resectional tuberculoid leprosy among their patients, who had recently been reclassified according to the Havana nomenclature. About 10% of the 1,363 patients examined were of the reactional form: 132 (24%) of the 544 tuberculoid cases. In French Guiana these observers had seen only rare cases, and those only among Asians.

—H. W. W.


This report contains more information than usual about the leprosy institutions in the country. There are 14 leprosaria in all, plus 14 leprosy homes not recognized as leprosaria, and a number of dispensaries for outpatient treatment. All but three of the leprosaria are maintained by missions with government assistance; Belra aids with personnel at four places. The largest mission leprosaria are those of the Benedictine Mission at Ndanda and Pemambio in the Southern Province, the latter with over 1,000 patients. Of the three government leprosaria the largest is at Makete in the Southern Highlands Province, where at the end of the year (during which there was a clean-out and 647 were discharged) there were 347 infected persons and 61 uninfected. New construction was going on there. Of the other government leprosaria, mention is made of one at Chazi (location not indicated). The third one would seem to be Mubeza hospital, the headquarters of a second medical officer for leprosy work who had been appointed, assigned to Tanga Province.

—H. W. W.


Regarding leprosy, it is stated that the building of the new leprosarium at Iteso, in North Nyanza, was continued during the year. [This place is of special importance because it is here that there has been established the East African Leprosy Research Centre, under the charge of Dr. J. Ross Innes, interterritorial leprologist.] The demand for treatment was so great that by the end of the year 2,000 patients were being treated with DDS there as outpatients. In the absence of a leprosarium serving the country as a whole, treatment has been organized in most districts on an outpatient basis through special leprosy clinics.

—H. W. W.


It is explained in an editorial note that this issue of the Revista is dedicated to the celebration of the tenth anniversary of the opening of the San Luis de Jagua leprosarium. The main feature is in the first section, 9 pages with 17 pictures of the place, outside and inside, and of various activities. There is also a 6-page article, by González Prendes, the director, and other staff physicians on the “general charac-
teristics" of the 363 patients there, and one on "our social atmosphere" by one Luis Armand, editor of "Nuestra Antorcha." —H. W. W.

According to history, "leprosy" is a Greek word translated in 300 B.C. from the Hebrew "Zaraath," which according to Leviticus (Jewish Code of Law) means: "Denounced as a result of Divine displeasure." The conditions defined in Leviticus have little in common with the disease we know as leprosy, but even nowadays there are here and there signs of cruelty towards people with that disease inasmuch as they are often segregated from society for being unclean and because they have been denounced by Divine Power. The Dutch word "melaats" is said to have been derived from the French "malade," which is a contraction of "Mal de Ladre," the disease of Lazarus. "Melaats," therefore, also has a religious meaning. As far as we know, according to Luke 16, verses 19-31, Lazarus was a poor man covered with wounds (parable of Christ) who after departing this life was accepted in Abraham's bosom, and we should therefore never denounce people suffering from leprosy, but behave on the contrary. It is therefore recommended that words such as lepra, melaats and the like should not be used in connection with ill associations. Factors influencing the spreading of leprosy are prolonged and intimate contact with persons suffering from leprosy whose lesions are bacillus positive, and the greater susceptibility of infants and young children up to the age of 14 years. To combat the disease the following is outlined: (a) organization; (b) the setting up of leprosaria, leprosy camps and outpatient clinics, and the registration of patients; (c) treatment with sulfones; (d) methods of segregation; and (e) preparations for performing BCG vaccinations as a preventative.

—Author's Abstract

The author, saying that certain common misconceptions about leprosy should be laid aside, discusses briefly its forms, its infectiousness, its distribution, and its decline in Europe since the 16th century. Leprosy, he says, which by its nature should propagate itself very easily, has never done so; the human race as a whole is not highly susceptible, so that the disease rarely spreads widely and rapidly. There appears to be some factor operating to reduce this already low basic susceptibility and to produce relative or complete immunity. There are indications that such a factor has been more operative recently than in the Middle Ages, and more in towns than in scattered populations. The question of whether this factor may be due to cross-immunity between tuberculosis and leprosy is then discussed. A previous tuberculous infection, evidenced by a positive tuberculin reaction, "is a very frequent cause of sensitivity to the leprosy bacillus, as demonstrated by the positive lepromin test." In tuberculin- and lepromin-negative persons, BCG vaccination may make both reactions positive. Historically there has been a diminution of leprosy in many countries corresponding with the spread of tuberculosis; the inference being that tuberculosis which spreads more widely and rapidly, "drives leprosy out, because it renders the population sensitive to the tubercle bacillus and therefore to the leprosy bacillus." [In this Lowe agrees with Chaussinand's thesis, THE JOURNAL 16 (1948) 431-438]. About control, Lowe has little faith in isolation, particularly compulsory isolation. It is not impossible that modern treatment is good enough to bring the disease slowly under control. Although it takes a long time to clear up a case, the patient is rendered less infectious in a comparatively short time and thus the period of isolation necessary is reduced. There is also the possibility that BCG vaccination will prove of value in immunizing contacts, particularly children. The future is regarded as promising. Leprosy is not a disease which is spreading and increasing;
it already has a downward tendency, and it is only necessary to accelerate this downward trend. The author considers reporting of leprosy cases as necessary, and that contact between open cases and children and young people should be prevented, but that compulsory isolation is inadvisable in many countries where it will do more harm than good. He ends with a quotation from the report of the WHO Expert Committee on Leprosy: "Public health and not public fears and prejudices should determine the policy in respect to leprosy control."—[From abstract in Trop. Dis. Bull. 51 (1954) 1292.]


As a patient whose smears are or become negative is unlikely to be infective, he is discharged from the leprosy home and told to continue on a maintenance dose of diaminodiphenyl sulfone 100 mg. daily. A three-monthly check is kept on these patients.—[Abstract from Excerpta Med. 9 (1955) 116.]


Based on geographic and epidemiologic speculations, the author believes that Sarcopilia penetrans (an arthropod which penetrates under the skin of the feet) may be able to transmit leprosy.

—M. TERNI


Between 1926 and 1950, 88,476 patients have been registered. There were at the time 8,525 patients in leprosaria and 9,885 under treatment in dispensaries, approximately 2 cases per thousand of the population. There were 5 leprosy dispensaries in the capital and 23 elsewhere in the state. In the most-affected municipalities the numbers of cases have diminished, the author believes, since the intensification of vigilance on the part of doctors and regional dispensaries; the indices of incidence have diminished; there is still an upward curve in the total number of cases, but they have become more chronic. The course of events has been affected by the smaller numbers of deaths under present-day treatment, but the curve of prevalence will begin to descend when there is an appreciable fall in the numbers of new cases (incidence). There is already a slight decrease in the endemicity and the gravity of the disease. The use of sulfones and BCG, along with an increase in the number of dispensaries and of the control of lepromin-negative contacts, should, with the collaboration of health centers, lead to the extinction of the disease from the state.—[From abstract in Trop. Dis. Bull. 59 (1958) 1051.]


In this report the author suggests a detailed program for the antileprosy campaign in French Equatorial Africa. This would require 8 treatment centers, 78 leprosy villages (the hospital being reserved for bed-patients only), and mobile medical teams. The treatment would be based on the use of deposit preparations (sulfones-retard) with weekly or twice-monthly injections. Chaulmoogra alone is not sufficiently effective, and oral treatment with sulfones is difficult to employ in primitive populations.

—M. VIETTE

Leprosy was apparently unknown in Mexico before the entry of the colonial powers. According to the department of health the number of cases of leprosy in Mexico is at present 30,000 to 40,000. It is least prevalent in the Haute Puebla area and in the central highlands. It is most frequently met with in the coastal regions of both oceans. Emphasis is laid on the removal of leprosy cases from tropical to temperate or cold climates. The largest leprosarium is near Mexico City, and accommodates 500 patients. Tuberculoid cases are not accepted. The patients are, when possible, given leave to go home. Severe restrictions are not enforced. “Leprosaria have no further place today, either in Mexico or in the whole world.”

For treatment, sulfone preparations are used.

—ERNST KEIL


In four instances leprosy was first observed in a child (2 lepromatous, 1 tuberculoid, and 1 indeterminate), and then from 2 to 6 years later it appeared in one of the parents (3 lepromatous and 1 indeterminate). The author considers three hypotheses: One, that the child was infected first and in turn infected his parent, but to the author this seems improbable because of the rarity of conjugal infection. Or, that the parent really had the disease and infected his child, which creates the problem of germ carriers and inapparent leprosy (lêpres invisibles of Gougerot). These cases are rare, and the author holds rather for the third hypothesis, that of infection from the same source, the disease developing in the children more rapidly because of their greater susceptibility.

—M. VIETTE


The author states that this patient, a 47-year-old veteran, is the first reported case of a veteran who developed leprosy as a result of military service in endemic areas during World War II. He served 5 months in New Guinea, 3 months on Leyte, and 7 months on Luzon, and the first symptoms appeared while he was still in the Philippines, in 1945. The family and personal histories provide nothing to indicate that the disease could have been contracted outside of military service, it being pointed out that Kansas is a nonendemic region.

[Note: This report received much newspaper publicity as being about the first World War II veteran to acquire leprosy as a result of military service. However, records at Carville indicate that 75 veterans have developed the disease during or as a result of military service in World War II or the Korean conflict, although not all of them remain as patients. Epidemiologically, the disease in 7 of the 75 patients can be attributed to military service in endemic areas. The histories of 68 of the veterans indicate that they had lived in endemic areas or had symptoms of leprosy before entering military service.]

—SR. HILARY ROSS


The report by Levan [see preceding abstract] is said to be an important one, but it has not been shown that the disease was actually acquired in service. Probably it was not. The diagnosis appears well established, but cases that develop within 18 months of first exposure are very rare. The patient's age—37 years when he went to New Guinea—is also against the thesis of recent infection. Leprosy infection of adult Europeans does occur, but it is unusual. Points to be considered are: 1. The patient's ethnic background (certain groups being especially susceptible). 2. Family history of leprosy (significant facts being often concealed). 3. Visits by the patient or his
parents to known endemic areas (there being such even in the continental United States). 4. The part of New Guinea in which he served, and his contacts with natives there. "The known distribution of leprosy in Dutch New Guinea is spotty, and presumably this is also true in the Australian end. His time in the Philippines before appearance of the first symptom was so brief that it is almost incredible that infection could have occurred there."

--- H. W. W.


Fifteen cases of leprosy were reported in Ohio from 1925 to 1951, mostly in foreign-born immigrants from endemic areas. One of the patients served in the Philippines and Hawaii for six years, and it is presumed that his infection was connected with his military service. It is suggested that physicians be suspicious of patients who may have migrated from endemic areas and present suggestive dermatological and neural manifestations. One case is reported in detail; the patient was admitted to Carville in 1951. [This patient died in September 1953 of marked amyloidosis following repeated lepromatous reactions.]

--- SR. HILARY ROSS

ROTBERG, A. Emprego dos termos "bipolar" e "infrapolar" para os aspectos intermediários e indeterminados de lepra. [Use of the terms "bipolar" and infrapolar" for the intermediate and indeterminate aspects of leprosy.] Rev. brasileira Leprol. 21 (1953) 13-15.

The author suggests the word "bipolar" for the intermediate cases, those that share characteristics of both "poles" of the Havana classification; in the Latin languages this would keep the symbol B of the English "borderline." Curiously, all other names in common use—-limitante, intermediate, transitional—carry initials of the other types of the Havana classification. By analogy, and as a substitute for the often-criticized "negative" words—i.e., indeterminate, incharacteristic—the name "infrapolar" is suggested.—[From author's summary.]

ROTBERG, A. Fundamentação e proposta de modificação da classificação de tipos de lepra de Havana, apresentando guia para uso prático. [Fundamentation and proposition of modification of the classification of types of leprosy of Havana, presenting a guide for practical use.] Rev. brasileira Leprol. 21 (1953) 16-32.

This is a lengthy discussion of classification, with proposals. A footnote explains that its general outline was presented at a meeting of leprologists in October 1952, and with changes resulting from the discussion was prepared as a contribution on the subject for the meeting of the WHO Expert Committee that was held in Rio de Janeiro in November 1952. The modification of the Havana scheme included the proposals that the "indeterminate group" should be called the "infrapolar type," and the borderline group should be called "bipolar."

--- H. W. W.


This is a belated report of the fifth national leprosy conference in Brazil, held in Curitiba, Paraná, May 1-3, 1953. There were 7 sessions, devoted to the usual topics plus one on immunization (premunition), and a plenary session; the substance of each is recorded briefly. There follow the reports of four committees. That on classification uses the terms "infrapolar" and "bipolar," for indeterminate and borderline, as proposed by Rotberg [see elsewhere]. That on immunization recognizes the value of the positive lepromin reaction as an index of resistance to leprosy infection, and then treats of the use of BCG in that connection.

--- H. W. W.

BECCHI, L. M. Contribuição ao estudo da lepra hepática. (Estudo clínica.) [Contri-
bution to the study of leprosy of the liver; clinical study.] Rev. brasil. Leprol. 22 (1954) 1-94.

This monographic report of a study carried on in three of the leprosaria of São Paulo between 1934 and 1941, winner of a prize in 1942, is now published without essential change. It is divided into three chapters of which the first, on the pathologic anatomic changes, deals with 91 cases out of 150 that were autopsied and is illustrated with 8 demonstrative photomicrographs; the second, on the clinical features, has 7 pictures illustrating hepatic enlargement; the third, on functional tests, has tables and graphs. Precisely how many cases were involved is difficult to tell, but there is a table involving 1,013 cases of which 754 were lepromatous, 51 were residual lepromatous (secondary neural), and 228 were tuberculoid or indeterminate. The clinical examination revealed practically 35% palpable livers in each of the first of these two groups, and 17% in the third one. The autopsies revealed leprous changes of the liver in almost all of the cases of the first two type groups (70 of 74), but in none of the 17 cases of the third type group. Clinically the enlarged livers were painless, and often associated with amyloidosis but rarely with splenomegaly; they were thickened and dull in a few cases but smooth in most of them; the consistency was increased. Hepatomegaly was marked in the course of lepra reactions, during which the liver became painful. A diagnosis of leprous hepatomegaly was made because the enlargement developed without fever, ascites, or circulatory disorders. Jaundice may be present if the condition is complicated by other nonleprotic disease of the liver. Only one-third of the total number of patients with leprous hepatomegaly complained of subjective symptoms, mainly gastric disorders and in rare cases dizziness, anorexia, somnolence, and physical and mental fatigability. The tests for liver functions give normal results. The occurrence of abnormal results indicates the presence of nonleprotic hepatic disease, and calls for discontinuance of antileprosy treatment and treatment for the nonleprotic disease. The histological changes of the liver consisted in periporal lepromatous infiltration, lepromatous induration, amyloidosis, and rarely leprous cirrhosis (1 case only). Tuberculosis of the liver was a complication of hepatic leprosy in four cases.—[In part from an abstract in J. Amer. Med. Assoc. 157 (1955) 1244.]


The common points between leprosy and tuberculosis are discussed. The causative agent in each case is an acid-fast bacillus. There exist parallergy and paraimmunity between the two infections, hence the use of BCG for prophylaxis. The chemotherapeutic agents act more or less the same in both diseases.

—M. VIETTE


Liver puncture biopsy was performed on 5 lepromatous patients. Specific histological lesions with bacilli were found in the 4 cases in which they were sought. After many months of treatment, further biopsies revealed slow regression of these lesions.

—M. VIETTE

SPYRATOS, S. Ponction de la chambre antérieure sur un cas d'iritis lépreuse; observations cliniques et cytologiques. [Anterior chamber puncture in a case of leprous iritis; clinical and cytological observations.] Ann. d'Ocul. (Paris) 187 (1954) 538-545.

Hemorrhage filling three-fourths of the anterior chamber occurred after diagnostic chamber puncture in a case of recurrent leprous iritis. The bleeding was due to the
withdrawal of aqueous rather than to any direct trauma by the needle. Marked improvement in the iritis occurred, which the authors attribute to the induced autohemotherapy. Causative organisms could not be identified. Examination of the cellular content of the aqueous showed lymphocytes, monocytes, histiocytes of the iris type, and unidentified cells with large nuclei. The authors feel that cytological studies of the aqueous humor make it possible to predict the nature and course of the ocular inflammation. However, in spite of this, and in spite of the favorable therapeutic effect obtained in their case, they feel that the advantages of anterior chamber puncture do not compensate for the risks involved.—[From abstract in American J. Ophth. 39 (1955) 142, supplied by Sr. Hilary Ross.]


The positive Thorn test consists in a decrease (not less than 45%) of the number of circulating eosinophil granulocytes after injection of ACTH. When an adrenocortical lesion occurs, especially of the fasciculate portion, the test will be negative. The authors performed the test in 20 leprosy patients with different types of the disease and found that 17 gave abnormal response to ACTH. One of the patients with a normal result died, and at autopsy his adrenals were found normal. The results confirm, according to the authors, the previous findings of adrenal lesions in leprosy.

—M. TERNI

MIRANDA, R. N. Leprofilia (ou Hansenofilia); desejo de ser doente de lepra. [Leprophilia (or hansenophilia); the desire to contract leprosy.] Rev. brasileira Leprol. 21 (1953) 67-68.

The author proposes, after discussion of authentic cases and with the justification of etymology, the term leprophilia for the cases of persons who want to be leprous.—[From author's summary.]


This is a very summary article calling attention to the occurrence of gynecomastia in conjunction with generalized dermatological disorders, as well as in numerous other conditions. Seven cases with the condition are reported briefly, 1 each of generalized atopic dermatitis, contact dermatitis with autosensitization, stasis dermatitis with autosensitization, generalized psoriasis, angiodermatomyositis, mycosis fungoides with hypertension, and unclassified collagen disease. Testicle biopsy in two of them showed some degree of tubule atrophy. [This article is valuable for anyone interested in the subject, especially because of the numerous references—in one of which, and nowhere else, appears the word leprosy.]—H. W. W.


The results reviewed in this paper are of patients treated in the research center in Uzuakoli, East Nigeria, people of the Ibo tribe who usually persist in their treatment until they can be given certificates of arrest of the disease. They had been selected from the Settlement and from the many outpatient clinics because of the severity and activity of their leprosy or because of complications arising out of treatment; they were selected as the most marked cases that could be found who could easily come for treatment at the center. In this report attempts are made to find answers to two questions: 1. What is the present condition of the patients who were being treated several years ago, and in how many has the disease been arrested? 2. How many have later shown relapse? Concerning the first question, an analysis is made of all the patients that had started sulfone treatment between March
1946 and May 1948. There were 131 of them, 9 bacteriologically negative (tuberculoid or other) and 122 bacteriologically positive (lepromatous). In 1954, 117 remained for analysis:

- Disease inactive and smears negative; discharged: 88 (75%)
- Disease inactive and smears negative; awaiting discharge: 17 (15%)
- Disease inactive but smears still positive: 12 (10%)

Of the last 12, 1 had had eight years treatment, 4 seven years, and 7 six years. Sulfone treatment has been found to be very sure, but sometimes very slow in its action. It appears to produce arrest of the disease in every case, but it may take a very long time to do so. Improvement up to a point followed by deterioration has not been seen, nor anything else indicating serious drug resistance. Different sulfones were tried, but no one form was found to be exclusively better than another. The second part is concerned with the relapse rate in discharged patients. In total, 252 patients had continued treatment until they could be discharged. Lepromatous cases had a minimum total period of 24 months treatment and were bacteriologically negative for 12 months. Nonlepromatous cases had to be clinically inactive for six months, with a minimum treatment period of 1 year (later increased to 18 months). Of the 232 discharged patients, 22 were not yet due to return, and of the remaining 229, 202 (92%) had returned at least once and some up to nine times in periods up to 5 years. Of 148 discharged lepromatous cases, 15 of the 159 reexamined had shown slight evidence of reactivation, but no serious case of relapse had been seen. Of 81 discharged tuberculoid cases, 8 of 69 reexamined showed signs of reactivation of the disease in the original form; in none had the lepromatous form developed, and in none had positive smears been found. Reactivation occurred early, usually within one year and almost always within two years of cessation of treatment. The relapses responded rapidly to treatment. Some cases that had turned positive became negative again without further treatment. Thus the relapses have been few, mild, and readily controlled.

—G. O. TEICHMANN


The author holds that TB-1 undoubtedly has a beneficial effect in most active cases of leprosy, but there are questions regarding toxicity and efficacy. Compared with sulfone treatment, TB-1 has two advantages: In patients who have difficulty with sulfone treatment because of severe and repeated reactional conditions, TB-1 is almost always tolerated better, and is beneficial. In some patients, clinical improvement under TB-1 treatment seems—for a time, at any rate—more marked than in similar patients on sulfone treatment. On the other hand, TB-1 treatment has several disadvantages. While toxic effects of the two drugs are seen in about the same proportion of cases, TB-1 is the more dangerous because it has a toxic effect on bone marrow and the liver. The early results, clinical and bacteriological, of TB-1 treatment appear to equal those of sulfone treatment, but the late results are less satisfactory. A considerable proportion of patients, after 2 years or more with good progress, reach a stage where TB-1 seems to lose its effect and progress stops. In several such patients, moreover, definite deterioration occurred, which the author had not seen with sulfone treatment. In the long run, therefore, TB-1 is less effective than sulfone. While sulfone treatment can be given daily, it can also be given twice weekly, once weekly, or according to some workers once every two weeks. TB-1 has to be given daily, and preferably twice daily, to be effective, which renders the treatment less widely practicable. The cost of TB-1 treatment is several times as great as that of oral treatment with DDS. For these reasons it is considered that TB-1 treatment of leprosy should be confined to patients who become allergic to sulfones or who are intolerant of it for other reasons. In some cases, after a period on TB-1 it is possible to return to sulfone.

—G. O. TEICHMANN

This paper, dealing with the late results of the treatment of leprosy with sulfone and TB-1, is in effect a summary restatement of the articles dealt with in the preceding two abstracts. The thiosemicarbazone used was TB-1/698 (p-acetaminobenzaldehyde thiosemicarbazone). The number of patients treated was 273, the treatment periods up to 38 months. The serious complications were agranulocytosis (6 cases), severe toxic anemia (6 cases), severe hepatitis (3 cases); there were 2 deaths. During the first two years there was satisfactory improvement in most instances, but in the third year improvement was not so good and many cases deteriorated, some rapidly. The late results were not as good as with sulfones, and in some cases there was evidence of drug resistance. Arrest of the disease was produced in a smaller proportion than with the sulfones, and some of the arrested cases relapsed. Thiosemicarbazone had therefore been abandoned for long-term treatment in patients who can tolerate sulfone, and was retained as an alternative remedy, useful temporarily, for those few patients who cannot tolerate sulfones.—[In part from abstract in Trop. Dis. Bull. 52 (1952) 163.]


Reporting to Lowe on cases previously treated by him, Davey says that a review of the TB-1 cases showed that deterioration in lepromatous cases is to be expected in a considerable proportion (30% of that group) by the third year, but that ordinarily they had done well when transferred to DDS. Thus there was no evidence of cross resistance. Because in the first few months on TB-1 the bacilli apparently undergo speedy reduction in numbers, it would perhaps be worth while to treat new cases with TB-1 for a year and then change to DDS. Of the tuberculoïd cases discharged after TB-1 treatment, four (10%) had relapsed, but only two of the lepromatous cases [out of how many not stated]. No evidence of resistance to DDS had been found. “Some of the old chronic patients still continue to have positive smears, but almost without exception they do not seem to demonstrate the continuance of active looking bacilli, but rather the slow elimination of acid-fast debris.” [This communication was a letter to Lowe personally, quoted at greater length than here indicated as an editorial note.]

—H. W. W.


This paper is really a report of progress in the Makogai Leprosy Settlement, Fiji, for 1952. The daily average of about 700 patients were 58% Fijian, the rest from Samoa, Tonga, Cook and Gilbert Islands. Discharges during the year totaled 58. There were only 13 deaths, the lowest number since 1920; none was from tuberculosis, which used to be one of the commonest causes of death. Of the 23 certified tuberculosis cases, the disease had become arrested in 17. The use of Pyczide (a form of isonicotinic hydrazide) had not only brought tuberculosis under control but had also greatly reduced the number of lepra reactions. Of the sulfones, the one first used was sulphethrone, but now the majority of patients were receiving DDS, which has proved equally effective and much less expensive. Thiacetazone was found effective in patients intolerant of DDS. A few patients had been given B283 with results much the same as with DDS, but the numbers were too small for true assessment of results.

—G. O. TEICHMANN

FLOCH, H. and GELARD, A. M. Une injection intramusculaire de 1gr80 de diamino­diphenyl-sulfone peut donner une sultonemie satisfaisante pendant un mois. [An intramuscular injection of 1.8 gm. of diamino­diphenyl sulfone will maintain

Current Literature

The authors review the different possible methods for obtaining slow absorption (deposit effect) of various drugs. They have previously reported that by using DDS "grains" of large dimension—100 microns (sieve 150-180) in diameter—it is practicable to inject 1.5 gm. of the drug in saline with 0.2% agar only once in 3 weeks. They have now found, in 15 cases, that after the intramuscular injection of 1.8 gm. of DDS in grains of about 200 microns (sieve 80-150) there remained on the 31st day a sulfone level (in DDS) sufficient to permit the use of this preparation once a month, a method which would evidently be very practical especially in certain countries such as Africa. It is necessary to be careful in the increase of dosage with this monthly deposit method, especially with patients treated with sulfone for the first time. One can of course start with the usual doses, now classical, for at least 2 months before using the intramuscular repository route, but if one prefers to start with the latter one can use 0.5 gm. of repository DDS (crystals 200 to 300 microns) weekly for one month, then 1.0 gm. of the same suspension every 15 days for the next 2 months, until the 1.8 gm. monthly is attained, without forgetting to give protoxalate of iron during the first months of such treatment.

—Authors' Abstract


The authors used by the intramuscular route two kinds of soluble sulfones, the monosubstituted succinyl-diaminodiphenyl sulfone, and the disubstituted diethyl-diaminodiphenyl sulfone. In order to increase the retardation of absorption, the vehicle contained 0.2% agar and 2.25% polyvinyl-pyrolidone. The sulfonemia (in DDS) after injection of 2.40 gm. of the diethyl sulfone or 5 gm. of the succinyl sulfone, studied for 7 days, revealed the practicability of giving such intramuscular injections only once weekly. The diethyl sulfone gave a better repository effect than the succinyl sulfone.

—Authors' Abstract


The patient, a 21-year-old female, had had tuberculoid leprosy since 1950, positive to lepromin. In October 1951 she started taking DDS in gradually increasing doses up to a maximum of 200 mgm. daily, with two interruptions due to side-effects, and by November 1953 had taken a total of 479 tablets of 100 mgm. each. She then developed a confusional episode of symptomatic type with auditory hallucinations, without interpretative tendency, which were added to the schizothymic personality of the patient. These manifestations disappeared with the suspension of the drug. This is the first case to develop mental disturbance in about 300 patients treated with sulfones in the authors' experience. They conclude that psychiatric complications are infrequent in sulfone therapy. Symptomatic psychosis of the toxic type appears in the form of a confusional syndrome and in the hue of the psychopathic personality of the patient.

—G. BASOMBIO


After reviewing the bibliography on INH therapy of leprosy, the author concludes that although it is considered a very effective drug in rat leprosy, a longer period of observation is needed for decision regarding its value in human leprosy.—M. TERNI

MARKIANOS, J. Action thérapeutique de l'hdyrazide de l'acide isonicotinique dans la
lèpre. [Therapeutic action of isonicotinic acid hydrazide in leprosy.] Bull.

Isonicotinic acid hydrazide was used in treating 44 patients, 13 with macular
leprosy, 25 nodular, and 6 others (they being 2 macular and 4 nodular who also had
pulmonary tuberculosis). They were given 150 mgm. daily for 2-3 days, then 300
mgm., which was tolerated satisfactorily. Ill-effects noted were jaundice (in 3 cases);
aggravation of the lesions and appearance of new ones; lepra reactions; stomatitis;
vertigo; and nephritis. These disturbances had necessitated suspension of the treat-
ment. In cases with both leprosy and tuberculosis, there was no improvement of the
tuberculosis, and that of the leprosy lesions was slight. In the macular cases the
lesions subsided and bacilli were no longer to be found. In the nodular cases the
old lesions retrogressed, while the recent ones seemed resistant. The bacilli disap-
peared from the nasal mucosa in some cases. The author believes that INH is less
efficacious in leprosy than are the sulfones, and he suggests that it be used only in
cases intolerant to them.

—M. VIETTE

PERCY, E. Klinische Erfahrungen mit Oxyprocain-Penicillin und Paratebin bei der
Lepra. [Clinical trials with oxyprocaine penicillin and Paratebin in leprosy.]

Five lepromatous and 7 tuberculoid cases of leprosy, mainly advanced, some of
whom had previously been treated, received for three months a daily dose of 300,000
I.U. oxyprocaine penicillin (diethylaminoethanol-p-aminosalicylic acid salt of procaine
penicillin). In most of them, in spite of the short period of treatment, repigmentation of
maeules and subsidence of infiltrates were seen. The bacillus picture, however,
remained practically unchanged. No symptoms of intolerance to the drug or lepra
reaction were seen. Five lepromatous and 8 tuberculoid patients received for three
months one ampule daily of Paratebin. [Paratebin is 400,000 I.U. oxyprocaine peni-
cillin + 1 gm. dihydrostreptomycin sulphate.] This preparation gave practically the
same results as the other, and was equally well tolerated (Follow-up period, 6 months).

—ERNEST KEIL

CHAUSSEINAND, R. and VIETTE, M. Peut-on utiliser la vaccination par le "Mycobacterium
marianum" dans la prophylaxie et la thérapeutique de la lèpre? [Can Myco-
bacterium marianum vaccination be used in the prevention and treatment of

Three groups of guinea-pigs, totaling 36 animals, were given injections either
intradermally or intraperitoneally of saline suspensions of BCG, M. marianum, and
M. phlei. Three injections were given, at 3-week intervals. Eighteen of the animals
received killed bacilli, each dose 1 mgm.; the other 18 received live bacilli, the doses
0.01 mgm. each. Six weeks after the last injection the guinea-pigs were tested with
lepromin. In the animals injected with killed bacilli, those given M. phlei were all
negative; of those given M. marianum, 4 were positive but 3 only weakly so; all
5 given BCG were positive, 4 very strongly so, with ulceration. Of the inoculations
with live bacilli, the results obtained with M. phlei and M. marianum were almost
identical; only 1 guinea-pig injected with the latter had a weakly positive Mitsuda
reaction, while all the others were negative. In contrast, the 6 guinea-pigs vaccinated
with BCG had strongly positive reactions. The reactivity to lepromin elicited by M.
marianum is, therefore, clearly inferior to that produced by BCG. The authors recall
that the morphological, tinctorial, and antigenic characteristics of M. marianum are
not in accord with those of the Hansen bacillus, but permit classifying it in the group
of paratuberculosis bacilli. They also recall that the vaccines prepared with the
paratuberculosis bacilli and used in the treatment of leprosy have no appreciable
effect on the progress of the infection. Finally, the results reported here show that
the action of *M. marinum* seems to be very inferior to that of BCG in the prophylaxis of leprosy.

—M. Viotte


The author treated 50 patients with amniotic extracts, using a 50% extract for local application in 30 of these, and injecting 4 ml. of a 10% extract intramuscularly in the other 20 twice a week. Treatment was continued for 3 years, in combination with sulfone therapy. The results were remarkable in healing up sores and perforating ulcers, and in improving the mobility of the fingers and strengthening the muscles in claw hand. If treatment is relinquished after 3 months the condition relapses.—[Abstract from *Trop. Dis. Bull.* 52 (1955) 165.]

De Souza-Araújo, H. C. Eficácia do “Cortone” na reação leprotica causada pelas sulfonas. [Efficacy of cortisone in lepra reaction caused by sulfones.] Folha Méd. 33 (1952) 202-204; also, Brasil-méd. 67 (1953) 88-87.

In 12 cases of lepra reaction due to the indiscriminate use of sulfones, cortisone (Scheri.ng) was used, four 25-mgm. tablets per day. In this paper is summarized the clinical records of 6 of these cases, treated with good results which led to the conclusion that if the results obtained with cortisone in these cases is durable, that drug will be of great benefit to many patients who suffer with such leprous reactions.

—Author's Summary


This report deals with 36 cases, all lepromatous, which had chronic lepra reaction for various periods of years and were subject to acute exacerbations, cutaneous or extracutaneous. Of this group, 19 were male and 17 female; they had been interned from 1 year (2 cases) to 14 years (1 case), the largest number (13) for 4 years [average 4.4 years]. The treatment was by the “concurrent” method of Arlindo de Assis, 0.2 gm. of BCG being given orally once a week for 15 weeks. After approximately a year of observation, 8 cases (22%) had complete clearing up of the condition; 9 cases (25%) had disappearance of the reactionary elements, there remaining only cutaneous residue; 14 cases (39%) showed marked improvement, with decreased intensity of the ENL elements; while in 5 cases (14%) there were no results.

—H. W. W.

Lippelt, A. BCG e eritema nodoso em doente de lepra. [BCG and erythema nodosum in leprosy.] Rev. brasileira Leprol. 21 (1953) 221-224.

Erythema nodosum leprosum occurs in 65-70% of interned lepromatous patients. In the present sulfone era the frequency seems to be greater than before, but the intensity is less. Many patients whose specific lesions have healed remain in the hospital because they continue to have the eruptions; they are deprived of the privilege of dispensary treatment because the clinical condition is interpreted as a sign of activity. The author gave BCG, 0.2 gm. per week to a total of 3.0 gm., to 200 leprosy patients with ENL. Only 20% were able to leave the hospital for dispensary treatment, and another 20% showed distinct improvement, i.e., decrease in the frequency and intensity of the eruptions. The results are not very encouraging, but the treatment is harmless and, small as is the number of cases cleared up, no other available treatment is as good.

—H. W. W.

The authors used the hyaluronidase diffusion factor, intraneural, for the treatment of lepromatous neuritis (technique described). They injected 56 nerves (ulnar, radial, median, sciatic, external popliteal, and the auricular branch of the superficial cervical plexus) in 45 patients. They obtained 78% marked improvement, and conclude that the intraneural injection of hyaluronidase is practical and harmless and better than the prevailing methods of treating neuritis. They have treated lepromatous cases almost exclusively, and so cannot say anything about differences of results dependent on type. Neither can they make an appraisal with respect to specific therapy, since the treated patients were receiving sulfones. They saw no appreciable modification in lepra reaction, although the few patients with neural reaction that were treated responded rapidly.—[Authors summary, supplied by G. Basombrio.]


Collapse of the tip of the nose of one or both alae is of common occurrence in leprosy; leishmaniasis and nasal abscesses are among other causes mentioned. The mechanism of the collapse, and the treatment and operative procedure, are thoroughly described. Satisfactory results are obtained with either frontal or nasolabial flaps, but the latter is preferable when the collapse is unilateral. The frontal flap has the advantage of lifting the lobule of the nose more evenly. After the nasal lining is repaired, the dorsum has to be rectified and the nose tip raised by bone graft or a columella neoplasty. [This article in Portuguese, illustrated with 26 photographs of 5 patients, appeared in Rev. brasileira Leprol. 21 (1953) 1-6.] —Sr. HILARY ROSS

FARINA, R. Rinoneoplastia total na lepra. (Médico Indiano.) [Complete rhinoplasty in leprosy; Indian method.] Rev. brasileira Leprol. 21 (1953) 7-12.

In a discussion of the complete reconstruction of the nose in leprosy patients, particular reference is made to the advantages of the Indian method with inter-superi lary pedicle, bone graft (not cartilaginous), and columella-plasty. The method proposed by the author has the advantage of a smaller number of operations, more adequate coloring of the repair, and less retraction of the transplant, but it leaves a frontal scar. The advantages and disadvantages of the Italian and Ollier's methods are also considered. Six photographs of each of 5 patients are reproduced.—[From abstract in Excerpta Med. 9 (1955) 21.]

FARINA, R. Cirurgia plástica e reparadora da cabeça na lepra. [Plastic and reparative surgery of the head in leprosy.] Rev. brasileira Leprol. 21 (1953) 261-279.

The author, plastic surgeon of the Sanatorio Padre Bento in São Paulo discusses here briefly the things that can be done to repair disturbances of the nose, ears, eyebrows, eyelids, lips, and the skin of the face itself. A brief section is devoted to other deformities secondary to the existence of lepromas. There is interest in the 13 pages of illustrations, a total of 111 pictures of 24 patients, showing the condition treated and the results obtained with various deformities of the nose, ptosis of earlobes, loss of eyebrows, and a few other things. —H. W. W.


Until the introduction of thiosemicarbazone the death rate from tuberculosis was very high among leprosy patients in the Beni Delta leprosy control area in Nigeria, even after the introduction of sulfones. With thiosemicarbazone treatment there was a great improvement, but tuberculosis was not cured until streptomycin and isoniazid treatment was introduced in 1953. Since then a dramatic change has taken place in the tuberculosis, but these two drugs have had no effect on the leprosy. The author therefore recommends combining these drugs with sulfones or thiosemicarbazone. [The reviewer would like to draw attention to the article by W. S. Davidson, Leprosy Rev.

Bonaccielli had previously reported a substance similar to the Bence-Jones protein in the urine of leprosy patients with nephritis. In the present investigation the authors try to identify that substance, which they found associated with albumin in the urines in 16 of 50 nephritic leprosy patients. The similarities between it and the Bence-Jones protein are very close. The substance is unstable in concentrated NaCl solutions in acid medium, and to sulphosalicylic acid; it has an electrophoretic pattern similar to the Bence-Jones substance; it is precipitated by an anti-Bence-Jones serum at a higher titer than by an antihuman serum. It is excreted by patients with severe visceral lesions (amyloidosis). Since the Bence-Jones protein is considered to be a group of substances, the authors are not able to identify their substance with the Bence-Jones substances.

—M. TERNI


The effects of antileprosy agents such as promin, kohk, chaulmoogra oil, and of inoculation with human, murine and pseudomurine leprosy bacilli, upon the blood sedimentation rate in rabbits were studied. Intravenous injection of promin for 111-178 days (30-32 cc.) accelerated the BSR. Intramuscular injection of chaulmoogra oil for 111-178 days (47-76 cc.) caused no change, nor did the injection of kohk for 133-145 days. Of 10 rabbits which had received 20-119 cc. of a suspension of the human leprosy bacillus subcutaneously for 35-221 days, 3 showed no change, 3 slight change, and 3 moderate change; the remaining 1 had striking acceleration of the BSR. Every animal inoculated with murine bacilli showed acceleration. In those inoculated with 9 mgm. of pseudomurine bacilli in 45 days, 3 showed slight change and the other 2 moderate acceleration. A skin suspension, injected 26 cc. in 45 days into 5 control animals, produced almost no change of the BSR.—[From abstract.]


In this part of the work the correlation between the serum proteins and the BSR of leprosy patients and experimental rabbits was investigated. In the serum protein fractions of patients, there was decrease of albumin and increase of globulin, especially of \(\gamma\)-globulin, related in degree with the seriousness of the disease. This fact appears to have a relation to the BSR. In the experiments with rabbits, the injection of antileprosy agents did not provoke any increase of globulin, while the injection of human and other leprosy bacilli gave a rise to increase of \(\gamma\)-globulin in most animals. These results are in accordance with the BSR. The control group which had received injections of the skin suspension presented no marked change in the serum protein fractions.—[From abstract.]

DE OLIVEIRA LIMA, S. O indice leucocitomico de Velez em tisioleprologia. [The leucocytic index of Velez in tuberculosis and leprosy.] O Hospital (Rio de Janeiro) 44 (1953) 139-145.

The author carried out the Velez test on the bloods of 201 leprosy patients (about 3 tests per patient, totalling 614) with the following results:
The difference between the lepromatous and tuberculoid cases is regarded as significant. A second table has to do with 125 patients found negative for tuberculosis by X-ray examination of the chest, classed with respect to lepromin reaction:

<table>
<thead>
<tr>
<th>Cases</th>
<th>Positive</th>
<th>Doubtful</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepromatous</td>
<td>32 (33%)</td>
<td>39 (38%)</td>
<td>41 (35%)</td>
</tr>
<tr>
<td>Tuberculoid</td>
<td>11 (24%)</td>
<td>7 (15%)</td>
<td>28 (41%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63 (31%)</strong></td>
<td><strong>66 (33%)</strong></td>
<td><strong>72 (35%)</strong></td>
</tr>
</tbody>
</table>

The difference between the lepromatous and tuberculoid cases is regarded as significant. A second table has to do with 125 patients found negative for tuberculosis by X-ray examination of the chest, classed with respect to lepromin reaction:

<table>
<thead>
<tr>
<th>Cases</th>
<th>Positive</th>
<th>Doubtful</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepra reaction</td>
<td>14</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>No reaction</td>
<td>0</td>
<td>34</td>
<td>41</td>
</tr>
<tr>
<td>Tuberculoid</td>
<td>0</td>
<td>7</td>
<td>12</td>
</tr>
</tbody>
</table>

In these cases the lepra reaction was regarded as responsible for the positivity. A third table shows the results in cases with tuberculosis, inactive or active:

<table>
<thead>
<tr>
<th>Cases</th>
<th>Positive</th>
<th>Doubtful</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>L, inactive tuberculosis</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>L, active tuberculosis</td>
<td>38</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>T, inactive tuberculosis</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>T, active tuberculosis</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Finally, 111 cases of tuberculosis without leprosy, 105 of them active and 6 inactive, were tested (as before, about three tests per patient), with the following results:

<table>
<thead>
<tr>
<th>Cases</th>
<th>Positive</th>
<th>Doubtful</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive tuberculosis</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Active tuberculosis</td>
<td>105</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Normal controls</td>
<td>0</td>
<td>3</td>
<td>17</td>
</tr>
</tbody>
</table>

It is concluded that, in leprosy patients without lepra reaction, a positive test means active tuberculosis. This study is to be extended.


In these experiments 92 guinea-pigs were used in total, divided into four lots of 20 or more each. Each animal in Lot 1 was injected intradermally with BCG tuberculosis, heated at 100°C for 2 hours, the dose of 0.1 cc. containing 0.33 mgm. Lot 2 received regular lepromin containing 0.74 mgm. of M. leprae per cc. (determined by the author's method; see following abstract). Lot 3 received the same lepromin concentrated by centrifuging to contain 3.4 mgm. per cc. The lot 4 guinea-pigs received two injections each, BCG on one side and lepromin of the same dilution on the other side; but relatively little is said of them. The BCG injections caused slightly larger lesions at 24 hours than the lepromins, but they retrogressed slightly more rapidly. At 21 days, however, all three were under 0.5 mm. on the average. There is no indication of anything different in the injection sites of the doubly-injected animals. Stress is laid on the histological findings with regard to the bacilli. They are taken up by macrophages and undergo lysis; the substances liberated by lysis cause transformation of the cells to the epithelioid type; and these cells, endowed with high metabolic activity, split the substances that were liberated by the lysis. This two-stage process occurs more rapidly with M. tuberculosis than with M. leprae, the macrophage phase being shorter and the epithelioid phase developing earlier. Consequently, tubercle bacilli disappear sooner than leprosy bacilli. The greater resistance of the latter to lysis can, it is stated, explain the two fundamental types of histologic structures which this bacillus produces in human tissues. In lepromatous leprosy the macrophages are unable to destroy the bacilli, and consequently they undergo transformation to the lepra cells. In the tuberculoid type the bacilli are lysed by the macrophages which then become epithelioid cells. On the other hand, the intrad-
cutaneous injection of the tubercle bacillus in human beings, including lepromatous cases, always gives rise to the tuberculoid granuloma, with bacterial lysis. Thirteen photomicrographs are intended to demonstrate the tissue reactions to the two bacilli at various intervals from 24 hours to 40 days.

—H. W. W.


In contrast with the large number of studies of sensitivity to tuberculin in leprosy patients in the small number of experimental observations in animals, and they are contradictory. In the authors' study 173 tuberculin-tested guinea-pigs were used, inoculated (1) with M. leprae (four subgroups, intraperitoneal and intradermal, with various amounts of bacilli), (2) with M. leprae murium (two subgroups, both intraperitoneal), and (3) with BCG (also two subgroups, both intraperitoneal); the fourth lot was kept for controls. The tuberculin tests were made periodically with 0.05 cc. of 1:10 OT. The results are set forth in 20 tables and 2 graphs, and in the summary. M. leprae inoculated intraperitoneally gave rise in most of the animals to tuberculin hypersensitivity, usually weak, which took 30 days to develop and waned thereafter, disappearing by the 60th day. The intracutaneous injections were much less effective. Lepromin caused no hypersensitivity. M. leprae murium induced hypersensitivity more slowly, reactions increasing up to the 60th day, but it was well-established in 90% and it remained unchanged up to the 160th day, waning at the 200th day. The results with BCG were identical with those with the Stefansky bacillus.

The following is the procedure used to determine the weight of bacilli (human and rat) per cc. of suspension [see preceding abstract]: 10-20 cc. was evaporated by heat (90°C-100°C) and ground in a mortar with 15-20 cc. of chloroform, which was then transferred to a separatory funnel; the trituration was repeated 3 or 4 more times, until the residue was free from bacilli. The collected chloroform in the funnel was decanted after 30 minutes and afterward centrifuged at 1,000 rpm for 5 minutes, then carefully separated. This chloroform contained the bacilli and lipids. After evaporating with heat (60°C) the residue, dried in the presence of sulfuric acid, was weighed. This method—that of Dharmendra, slightly modified—gives the approximate weight of bacilli per cc. of suspension. It is not a precise method, for it includes the tissue lipids extracted by the chloroform, and there is a slight loss of bacilli in the tissues. It is, however, held to be better than the method of separation by repeated centrifuging in solutions of different densities.

—H. W. W.


The authors continue their study of the histologic lesions produced in lepromatous cases at the sites of injections of various specific and nonspecific materials [The Journal 20 (1952) 341-346; 21 (1953) 459-462; also, abstracts. 21 (1953) 612, 22 (1954) 112 and 113], studies which have indicated that the skins of such patients have a specific altered reactivity. They now report on the results with BCG, selected for one thing because in healthy persons it produces a lesion readily distinguished histologically from the lepromatous infiltration. Twenty-one patients, 13 with and 8 without active lesions, were injected intradermally. Clinically the effects were as in normal persons, the tuberculin-positives (9 of the 21) showing an accelerated or Koch-type reaction. Histologically, however, the lesions were the same regardless of tuberculin reactivity. Of 25 biopsy specimens taken from 16 patients at intervals of

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4 days to 10 months after vaccination, 22 showed “isopathic” changes. Usually they were quite leproma-like (3+), and only in 8 instances were they prelepromatous (2+) or less. The question is discussed of whether or not such inoculations might reveal the presence of active leprosy and thus be useful in detecting early cases or even infection in contacts. [Presumably referring to those with or to develop the lepromatous type of the infection.] Also, whether the procedure might be of value in determining the effectiveness of treatment, suggestive indications having been seen. [The table, however, shows three 3+ findings and one 2+ in the five “inactive” cases biopsied.] Of the 12 patients tuberculin negative before the inoculation, 8 became positive afterward. All were negative to lepromin before the tests; of 20 tested afterward, 5 gave positive early and late reactions, while another 6 were positive to the early reaction only. No benefit seemed to result from this change of reactivity. One to 2 years later all were again negative.

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Of 119 cases of tuberculoid leprosy given the Mitsuda test during attacks of lepra reaction, 14 were negative, 1 was doubtful, 17 were 1+, 44 were 2+, and 43 were 3+. The degree of positivity varied directly with the duration of the reaction; the longer the time after its onset, the larger the percentage of positives. Of the patients in whom it had lasted 15 or more months, none was negative. It was noted, however, that when the test was repeated, at intervals of 6 or more months, the results first obtained tended to be repeated on subsequent occasions. In some cases, in which the clinical manifestations regressed very slowly, remaining active for 2, 3 or more years, the Mitsuda reaction remained negative or only weakly positive. Another factor was the number of lesions, cases in which they were few being most likely to be positive. The results showed that a positive reaction can occur in bacteriologically positive cases, but in general those with frankly positive reactions were negative for bacilli on routine examination.—[In part from abstract in Trop. Dis. Bull. 50 (1953) 1055.]

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An infant born to leprous parents was separated from them at the age of 5 years, at which time he showed no symptoms of leprosy. Twenty-one months later he was given an injection of lepromin. The reaction was negative, but 3 weeks after the injection of the antigen there were noted two cutaneous lesions with impaired sensation. The patient was treated with diane, 500 mgm. daily. After 3 weeks of treatment the spots had become larger, new ones appeared, and Hansen bacilli were found in skin specimens. The sulfone treatment was continued in a smaller dose, and after some months the spots subsided and the bacteriological examinations were negative. This patient, whose Mantoux reaction was negative, was given BCG intradermally, and 25 days after the vaccination a positive Mitsuda reaction appeared at the site where the lepromin had been injected 194 days before.

—M. VIETTE

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Intradermal tests with the lepromin reagent of Dharmendra were made in 229 leprosy cases (174 nodular, 54 neural, 10 tuberculoid), the Mitsuda test being applied
at the same time for comparison. The results were as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Lepromatous</th>
<th>Neural</th>
<th>Tuberculoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitsuda</td>
<td>164</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Dharmendra</td>
<td>173</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

The Mitsuda and Dharmendra reactions coincided 100% in positivity in the tuberculous cases, and 90% in negativity in the nodular cases. In the neural cases the Mitsuda reaction was positive in 91%, while the Dharmendra reaction was positive in 70%. —[From abstract, tabulation made up.]


The authors have investigated with the antigens listed in the title the inhibitory action of the corticosteroids on reactions of hypersensitivity, with special interest in the local action of hydrocortisone acetate on the reactions to lepromin. The study involved 15 adults with benign dermatoses who had not had contact with leprosy. They injected 0.2 cc. of the drug (25 mgm. per cc.) intradermally, and then in the same place injected one of the antigens studied. Of 46 control tests, 12 were with tuberculin (Mantoux), of which 6 were positive; 9 were with Ducrey vaccine, of which 8 were positive; 10 were with the Frei antigen (Lygranum), of which 5 were positive; and 15 were with lepromin, all of which were positive. The hydrocortisone partially or totally inhibited the reactions to tuberculin, Frei, Ducrey, and the early allergic (Fernandez) reaction to lepromin in the majority of the cases. This drug also inhibited the late (Mitsuda) immune reaction to lepromin, either partially or totally, preventing the formation of the nodule at three weeks and later. Histologic examinations confirmed the clinical observations by showing that the drug produces atrophy of the epidermis and suppresses the formation of the histologic infiltrate that characterizes these reactions. The authors conclude that the parallelism in the inhibitory action of hydrocortisone over the early and late responses to lepromin suggests an intimate relationship between the two phenomena. [Later, in their article in The Journal 22 (1954) 129-138, the authors speak of this present report as a preliminary one.]

—Sr. HILARY ROSS


This study is based primarily upon the rôle which Raffel and associates have demonstrated that the wax fraction of the tubercle bacillus (or, more strictly, the lipopolysaccharide of Asselineau and Lederer) have in the experimental induction of the delayed type of hypersensitiveness to tuberculin and also to other substances, a condition the mechanism of which is unknown. [See The Journal 20 (1952) 167-171, five abstracts.] Addition of the wax fraction to water-in-oil emulsions has been found to cause enormous proliferation of macrophages locally and in distant locations. The present study is mainly of the suitability, for intracellular multiplication of tubercle bacilli in tissue cultures, of peritoneal exudate mononuclears of guinea-pigs treated with the bacillary wax. [See The Journal 22 (1954) 1-11, original article; 118-119, two abstracts.] In three separate experiments it was found that such cells depressed or inhibited multiplication “to a considerable extent”—to the same degree, in fact, as do cells from guinea-pigs vaccinated with BCG. Secondarily, the authors report further on the tissue effects of injection of emulsions containing either purified wax or lipopolysaccharides into the footpad of the guinea-pig. The foot swells to several times the normal size and ulcerates, and there is massing of large, coarse macrophages...
of very different appearance from those in control lesions. There is also considerable proliferation of such cells in various distant organs. —H. W. W.

INEERILLO, R. La reazione di Middlebrook-Dubos nei lebbrosi. [The Middlebrook-Dubos reaction in leprosy patients.] Arch. E. Maragliano Pat. e Clin. 7 (1952) 1177-1183.

In 50 leprosy patients of different types, the Middlebrook-Dubos hemagglutination reaction (sheep cells sensitized with Koch's old tuberculin diluted 1:8) gave the following results: negative 1:4, 0%; positive 1:4, 12%; 1:8, 24%; 1:16, 22%; 1:32, 24%; 1:64, 14%; 1:128, 4%. There seemed to be no relation between the titers of the positive reactions and age or sex, type or severity of the disease, or bacteriological findings.

—M. TERNI


This being a very condensed review of the literature on the subject indicated, it is not susceptible to abstracting but should be examined in the original. There are 29 references, some to items which themselves are reviews. —H. W. W.


Methods other than culture in vitro and inoculation of M. leprae must be used to determine whether the germs are alive or dead. Three methods have been used for this purpose: (a) direct observation with the electron microscope or the phase-contrast microscope; (b) observation of cell respiration; (c) staining. In the work reported in this paper the Ziehl-Neelsen method was used to determine whether the bacillus undergoes significant changes in morphology or staining affinity when submitted to procedures which might have influence on its vitality. Bacilli obtained under the following conditions were studied comparatively: (a) from patients treated with sulfones or chaulmoogra oil, and from patients who had received no previous treatment; (b) from recent, fresh lepromata, and from lepromata submitted to heat in different ways; (c) from recent, fresh material and from material which had been kept in different preserving fluids for days, months or years. It was found, taking into account morphologic characteristics, staining affinity, degree of positivity, and distribution of the bacilli, that the Ziehl-Neelsen method permits differentiation between lepromata from treated and untreated patients, and between fresh lepromata and macerated lepromata or a boiled suspension of bacilli. Taking into account only the individual bacilli, however, i.e., their morphologic and staining characteristics, it is not possible to establish the origin of the material under examination, because similar morphologic and staining characteristics are seen in bacilli from fresh lepromata or lepromata submitted to boiling, autoclaving, maceration, clinical treatment, or tissue reaction (in inoculation). Conclusion: the Ziehl-Neelsen method does not permit differentiation between living and dead bacilli. —[From author's summary, supplied by G. Basombrio.]


The suppuration which takes place in the course of erythema nodosum leprosum has been studied to determine if this condition is caused by ordinary pyogenic germs, excluding the leprosy bacillus. Fus was collected aseptically from 42 ENL lesions of which the overlying epidermis was still intact, and was planted on goat-blood agar, aerobically in ordinary bouillon, anaerobically in Tarozi's bouillon, and on Kirchner's and Oka-Katakura's media for acid-fast bacilli. The results follow:
The cultures were entirely negative except in 3 cases. In 2 cases a Corynebacterium appeared, but it did not grow on blood-agar and is therefore regarded as a non-pathogenic saprophyte contaminating the cultures accidentally. In the third case Staphylococcus albus appeared in the bouillons, and it and Staphylococcus aureus upon blood-agar. In this case the pus itself contained these organisms, but the significance of the fact is a question. It is concluded that the suppuration of the lesions of erythema nodosum leprosum is independent of pyogenic or other organisms which can be recognized by the various media used, but must be attributed to some other mechanism. —[From abstract.]


Nucleic acid, gram substances and volutin of the leprosy bacillus have been stained with the Feulgen reaction, Newton's gentian violet (modified method), Brachet's methyl green-pyronin method, thionin method, gram staining and our diluted methylene blue method. The mechanisms of these staining methods are discussed. Leprosy bacilli are stainable with the Yoshida method for mitochondria, and with Baker's phospholipid method, to the same degree as with the Ziehl-Neelsen method. From these and other histochemical findings, the acid-fastness of leprosy bacillus is attributed to phospholipid or unsaturated lipid in the bacilli. And it is imaginable that the center of metabolism of the leprosy bacillus is in the nucleus. —[From abstract.]


The effects of various experimental methods with leprosy and mice and developing chick embryos have been tested, as follows: subcutaneous or intraperitoneal injections of glandular mucin and Ota's solution containing trypan blue, diatom and potassium iodide into mice before or after the inoculation of M. leprae; intraperitoneal injection of cobra venom before the inoculation of bacilli; intracerebral inoculation of bacilli into suckling or slightly older mice; inoculation of M. leprae into the yolk sacs of developing chick embryos. No propagation of the lepra bacilli was obtained in any of the experiments. —[From abstract.]


The inhibitory effects of certain antibiotics—acidomycin (thiazolidone antibiotics of McLamor et al.), streptomycin, and aureomycin—on the development of murine leprosy were studied. Acidomycin and aureomycin had no inhibitory action, but streptomycin had a moderate inhibitory effect. From these results and those of previous studies of chemotherapeutic agents, it is believed that antibiotics which are ineffective in experimental tuberculosis are also ineffective in preventing development of murine leprosy. —[From abstract.]


This paper reports the results of experiments to determine (1) if the murine bacillus can become resistant to SM, and (2) if the combination of SM with INH can prevent the murine bacillus from becoming resistant to INH. Relative to the first
question, white rats inoculated subcutaneously with the murine bacillus were injected with SM, 5 mgm. a day, six days a week. The lepromas which had developed after the total of 610 mgm. SM and that had developed after the total of 650 mgm. SM and then received no treatment for 150 days [sic] were selected for the inoculation of the next lot of animals. These two strains were inoculated into white rats and SM of the same dose was injected in the same manner for 150 days. The results show that the onset of the disease was inhibited to the same degree with both strains as in the case of SM-sensitive strains previously reported [see preceding abstract]. It is concluded that the multiplication of the murine leprosy bacillus cannot be strongly inhibited by SM, but it does not become resistant to it. Relative to the second question, a total of 50 mgm. INH and 200 mgm. SM were administered (INH 4 mgm./kgm. and SM 20 mgm./kgm. daily, 6 days a week for 60 days) to white rats with large lepromas. The lepromas that remained were extirpated, diluted, and inoculated to other rats, and those of this second generation were in turn transferred to a third lot. These animals were then administered INH from the next day for 150 days. The results show that there was an appreciable resistance compared with the sensitive strain, but development was clearly more delayed than with our resistant strain [THE JOURNAL 22 (1954) 494]. Therefore, INH resistance can be lessened by the combination of SM with INH.—[From abstract.]


In a search for the effective radical of INH upon the murine leprosy bacillus, aromatic aldehyde derivatives of INH and hydrazines combined with thiazol or pyrimidin nuclei, which have strong inhibitory effects upon the tubercle bacillus in vitro, were examined. Two of the compounds have the most inhibitory effect, two of them appear to accelerate the development of murine lepromas, while other derivatives have no effect. From these results it follows that drugs which are effective with the tubercle bacillus cannot be expected always to be efficient with the murine bacillus. The effect of INH upon the murine bacilli cannot be attributed only to the hydrazine radical, because the derivatives consisting of H,N-NH cannot always have the inhibitory effect, while some of the compounds combined with COOH \( \rightarrow \) N besides INH have this effect. Therefore, isonicotinic acid cannot be expected to provide the effective radical for research upon the murine leprosy.—[From abstract.]