

## CURRENT LITERATURE

*It is intended that the current literature 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.*

SCHALLER, K. F. (ed). Report of the Second National Leprosy Conference of Ethiopia, held in Addis Ababa from November 30th to December 2, 1961. [See News Items, *THE JOURNAL* **32** (1964) 86.]

This little booklet, of 152 pages, gives full details of the meeting, of which there were 42 "permanent members;" 2 were from Makerere University College in Uganda, and 1 was from Germany. Besides the inaugural session, which was opened by the Minister of Public Health, there were ten working sessions and one extra (*ad hoc*) session. The coverage of the problems of leprosy in the country and in general was extensive, and the remarks cannot be noted here in detail. Emphasis was given the subjects of epidemiology and control, treatment, including surgery, and rehabilitation, health education, and legislation. One feature may be noted particularly, however, because the instructions are archaic. In telling of laboratory practice in leprosy, Ch. Serie (director of the Pasteur Institute of Addis Ababa) specified preparation of smears for bacteriologic examination of skin lesions by *crushing of biopsy specimens* on the slide! Nasal smears, he advised, should be made from cotton tampons. Incidentally, globi (called "globies") were defined as "masses of bacilli lined up in parallel." P. Charles, senior WHO tuberculosis adviser, told of a method (from a French source) of staining smears for acid-fast bacilli which is very reminiscent of Gabbett's method, except that Tween 80 or Teprol is added to the carbol-fuchsin; cold staining (a great advantage), is specified. The conference voted to retain the regular Ziehl-Neelsen method. The organization of this conference was largely due to Dr. K. F. Schaller, chief of the Leprosy Control Service, from whom (at the Princess Zenebework Memorial Hospital in Addis Ababa) copies of this report may doubtless be obtained on request.—H. W. W.

JOPLING, W. H. Leprosy and its management in Britain. *London Clin. Med. J.* **4** (1963) 47-54.

The author divides the history of leprosy in Britain into four periods. *First*, it was endemic in the Middle Ages, but the incidence then can only be guessed at. The *second* period covers about 400 years, when leprosy ceased to be endemic and slowly died out, probably in the 16th century; after the end of the 18th century any person with it probably acquired it abroad. In 1914 a small special hospital, The Homes of St. Giles, was opened near Chelmsford, Essex. The *third* phase comprises the 17 years between the Second World War and the passing of the Commonwealth Immigrants Act in 1962, during which period about a million Commonwealth immigrants had settled in Britain. The Ministry of Health made leprosy a notifiable disease and provided a special hospital, the Jordan Hospital, where the author works, under the National Health Service in September 1951. In the *fourth* and present phase there has been a check on immigration and the prohibition of entry of persons with signs of the disease. These measures will doubtless lead to a decrease of new cases, although as yet the decrease has been slight. There were 246 patients under treatment on December 31, 1961. Of the 169 patients dealt with by the author at the Jordan Hospital, 125 were inpatients and 44 were outpatients—although there is no compulsory segregation. The author thinks that all children should be treated as inpatients until rendered noncontagious. From the clinical aspect there are few reasons for admitting patients to a hospital, where a considerable proportion (10%) become fat and flabby from inertia, and where some even develop hospital psychosis, which does not happen with outpatients. [The rest of this paper deals mostly with diagnosis and various phases of treatment. The search for better antileprosy drugs must continue, and it is said (without explanation) that success depends on the culture of the leprosy bacillus.] [From abstract by J. R. Innes in *Trop. Dis. Bull.* **61** (1964) 151-153.]

BOYER, G., RIGAUD, C. A. and DUVIVIER, J. La lèpre en Haiti. [Leprosy in Haiti.] Arch. Inst. Pasteur Martinique **16** (1963) 89-98.

Leprosy is endemic in Haiti, a fact which is not realized by all doctors there. The total number of patients registered in the four years 1958-1962 was 78, but more doctors are now recognizing leprosy. The incidence in Port-au-Prince, where most of the patients have been benign in type and not very contagious, is significant, but the disease is also found scattered throughout. Treatment is based primarily on the sulfones, the tolerance for which is excellent and the results with which have been good—best in lepromatous cases, some of whom have lost their lepromata in 8 or 12 months. Tuberculoid patients (major) in most cases have had flattening of their lesions in 6-8 months; changes occur more slowly in minor tuberculoid. Although many patients abandon treatment when they improve, others have continued regularly for up to 2 years. Recommendations for improvement of the work, including the training of more specialist workers, are offered. —[From abstract of J. Ross Innes in *Trop. Dis. Bull.* **61** (1964) 156.]

PINTO, A. Relatório da missão de prospecção e estudo da endemia leprosa na província ultramarina de Cabo Verde. [Report of a mission to study leprosy in the Cape Verde Islands.] Anais Inst. Med. Trop. (Lisbon) **18** (1961) 313-332.

The mission identified leprosy cases in 5 of the Cape Verde Islands. In 3 of them the prevalence was very low, but in 2—Santo Antão and Fogo—it was significant. Nevertheless, these being islands, it should be possible to eradicate the disease in a short time. The campaign as outlined would follow modern principles, including the use of persuasion rather than force in the existing leprosaria and clinics. [The actual incidence for Fogo, the abstractor comments, was 18 per thousand and 4,407 persons were seen. In Santo Antão 41 persons with leprosy were found among 5,823 examined, an incidence of 7 per 1,000.—[From abstract by J. Ross Innes in *Trop. Dis. Bull.* **61** (1963) 153.]

ALI, P. M. An epidemiological leprosy survey in Chingleput District of Madras State. Leprosy in India **35** (1963) 176-187.

In 1962, an intensive leprosy survey was made in 381 villages of the Chingleput District of Madras State in an area of 320 sq. miles the population of which was over 200,000; about 96% of the population came under survey. The prevalence rate was found to be 21 per thousand, with a child rate of 17%, and an open-case rate of 15%. These results are contrasted with those of previous surveys; the lepromatous rate has been falling, and leprosy in the district is probably on the decline. Genetic susceptibility is regarded as a determining factor in the acquisition of the disease.—[From abstract by J. Ross Innes in *Trop. Dis. Bull.* **61** (1964) 155.]

DINIZ, O. Algumas informações estatísticas sobre a campanha contra a lepra em Minas Gerais. [Statistical data on the campaign against leprosy in Minas Gerais.] Rev. Assoc. Med. Minas Gerais **13** (1962) 247-249.

The author reports some statistical data from the work carried out in Minas Gerais in the period 1956 to 1960, and gives some comparisons with data from the 5 years before that, 1951 to 1955. From registry at dispensaries and leprosaria it appears that 4,515 patients were recorded in 1951-1955, an annual average of 905, but when the new campaign was started (1956-1960), 7,107 patients were registered, an annual average of 1,421. The lepromatous rate in the first period was 69.5%, and 53.3% in the second. The tuberculoid percentages were correspondingly small (17.8% and 22%), while indeterminate leprosy almost doubled (12.7% to 24.7%). Although more trained staff is needed in order to achieve the eradication of the disease, the mass of lepromatous infection is being dealt with now and the more bland forms of the disease are appearing. The author comments that the system of physical isolation of the patient is obsolete, and is replaced by the chemotherapeutic control of the reservoir of infection plus the use of prophylactic vaccination of contacts, the work being carried out in the surroundings proper to the patients without transporting them elsewhere with the accompanying undesirable consequences. The total number of registered and otherwise known leprosy patients in Brazil is probably 98,000.—[From abstract by J. Ross Innes in *Trop. Dis. Bull.* **61** (1963) 155-156.]

CHRISTIAN, E. B., CHRISTIAN, J. J., RAO, A. S., CHRISTIAN, L. R., CHRISTIAN, I. V. and JAISOORYA, N. M. Leprosy investigation and treatment centre, Zaheerabad survey; education and treatment work. *Leprosy in India* **35** (1963) 188-192.

In 1962 the authors surveyed a total population of 61,584 in 54 villages within a 10-mile radius of the treatment center at Zaheerabad and found 805 cases, an incidence of 15 per thousand; the lepromatous rate was 35%. The total number of healthy contacts was 3,190. In 70% of the cases there was a definite history of contact, in most instances a lepromatous contact. There appeared to be a lack of spread of the disease in families where only nonlepromatous cases were found. It was also found that leprosy contracted from house contact or early in life was of severe type. Routine treatment was by oral DDS, the dosage 300 to 400 mgm. a week, and hospital treatment was available for all patients with reactions or trophic ulcers. The great majority showed improvement.—[From abstract by J. Ross Innes in *Trop. Dis. Bull.* **61** (1964) 155.]

MACLEOD, C. M. Biological implications of eradication and control. *American Rev. Resp. Dis.* **88** (1963) 763-768.

This article, the "keynote address" at a meeting of the Canadian Tuberculosis Association, has much that is applicable to leprosy. "Eradication" has been defined (Andrews and Langmuir) as "the purposeful reduction of specific disease prevalence to the point of continued absence of transmission *within a specified area*" [italics added]; and "control" as the specific reduction to relatively low levels of occurrence, this being a step on the way to eradication. Late in the discussion the author points out that certain of the points regarding which knowledge is lacking are (1) "the chemical nature and properties of the substance or substances in the tubercle bacillus that are responsible for its pathogenesis," and (2) "whether specific immunity in the usual sense of protective antibodies applies in tuberculosis." Any agent used for immunization, as BCG, "produces a state of delayed hypersensitivity which obscures detection of a specific immunity that might have developed concomitantly." There is no clear evidence that hypersensitivity itself is protective against *initiation* of infection, while there is evidence that it alters the course of the disease—commonly to the patient's detriment. The idea of eradication is laudable, but it is seldom realistic because it overlooks the realities of biology. In this connection is cited [perhaps a little facetiously] the white-winged beetle in the south-eastern United States, "which somehow gets eradicated year after year but is always back the next year to be eradicated again." "Dreams of eradication had best be postponed until we know more than we do now."—H. W. W.

BROWNE, S. G. The variegated pattern of leprosy. *Leprosy in India* **35** (1963) 193-199.

The author gives various impressions from his recent tour of leprosy research centers, the general impression being of a variegated pattern of disease which is often atypical in the individual patients who should not be forced into rigid classifications. The disease becomes more serious in various respects as lepromatous cases preponderate. Frequent examination of household contacts is still the most economic mode of case finding. The whole community must be regarded as regularly exposed where the prevalence rate is over 20 per thousand. Climatic influence on the disease is hard to assess, but in Calcutta there is a fourfold increase in the number of new cases seeking treatment in the wet months (July to October). The lepromatous/tuberculoid ratio increases notably from West Africa to Eastern Asia, from below 10% to over 60%. Early peripheral neuritis, very valuable in early diagnosis, is seen more often in the East than in Africa; and in the East lesions tend to have greater multiplicity, total volume, and succulence. Other features of leprosy in the Far East compared with Africa: the borderline variety is nearer to lepromatous; polyneuritis seems to involve more superficial nerves; alopecia is almost unknown in Africa. Polyneuritis without skin lesions is a well-recognized entity in India, but does not occur in Africa or the Far East. In India, reactional episodes in tuberculoid leprosy are more violent than in Africa. Mutilations of the feet (etc.), wasting of the muscles of the hands and hand deformities, and facial deformities are dreaded in all countries, but corrective surgery is given different degree of attention in different communities.—[From abstract by J. Ross Innes in *Trop. Dis. Bull.* **31** (1964) 153-154.]

CHODANKAR, V. P. Association between sex and type in leprosy: a variation on the theme. *Indian J. Med. Res.* **51** (1963) 252-264.

This report is of a statistical study of the sex ratio of patients registered at the outpatient clinic of the Aeworth Leprosy Home, Bombay. First, the 2,945 cases registered in 1958 are dealt with in 12 monthly groups. Only in 2 of the groups, and in the totality, did the Chi-square test give association between sex and type. It would seem that the results might vary with the statistical test applied. The sex ratio was found to "vary with the type by the analysis of variance of the proportion of females in each type in the samples." In borderline cases, evolved from the tuberculoid, the sex ratio is very high, 11.2:1, which perhaps indicates that the immunogenic potentiality of women is higher than that of men. The total registration of 33,378 patients between 1943 and 1960 showed a significant correlation coefficient between the sex rates and lepromatous rates for each year, lepromatous leprosy having the greater affinity for males. Lack of sex disparity among children with leprosy is attributed to the low lepromatous rate prevailing among them.—H. W. W.

TAMESIS, J. V. Leprosy lesions of the eye. *J. Philippine Med. Assoc.* **39** (1963) 107-111.

In summary, it is said, leprosy in its natural course will eventually invade the eye and cause blindness unless interrupted by therapy of the disease. Blindness may follow from any of the following conditions: atrophía bulbi resulting from destruction of the ciliary body and retina; corneal ulcers and keratitis, whether primary (brought about by invasion of the bacillus), or secondary (due to anesthesia and exposure, and secondary infections); and iridocyclitis and plastic uveitis, which may bring about the serious complication of secondary glaucoma and cataracts. The eye is not rapidly involved, and the lesions take time to evolve; there is therefore sufficient time to minimize or entirely prevent ocular complications if the leprologist and ophthalmologist work together.

—H. W. W.

ARRIGHI, F. Lèpre multimorphique. [Multimorphic leprosy.] *Bull. Soc. française Dermat. Syph.* **69** (1962) 552-553.

This is a report of a case, presented at a meeting, which presents a problem in classification. There were multiple achromic macules without infiltration or elevation, and for that condition the diagnosis was indeterminate (although there was slight loss of the eyebrows); and a vast, bacteriologically-negative bulla on the right leg, which suggested lazarine leprosy. There was extensive anesthesia, moderate enlargement of the ulnars, macular atrophy of the hands, and a perforating ulcer of the right foot, and these changes were regarded as of the tuberculoid type. The nasal mucosa presented lepromatous rhinitis, with specific ("Virchow cell") structure and abundant bacilli. The reactions to lepromin were negative. No conclusions are offered. [It might be interesting to see what type diagnosis or diagnoses would be arrived at by a poll of practicing leprologists.—H. W. W.]

ROLLIER, R. Deux cas de lèpre tuberculoïde chez le nourrisson. [Two cases of leprosy in nursing infants.] *Bull. Soc. française Dermat. Syph.* **69** (1962) 564-567.

Both of the cases reported were only 1 year old when seen, recognized because they were accompanied by lepromatous parents. One had "some rare" rosy papules on the back; the other had 5 small, recently-appeared papules on the body. Both were Mitsuda positive, but only one gave the early Fernández reaction. Both were put under DDS treatment, and the lesions in the first case had disappeared in about 6 months; in the second case many tens of new tubercles, 1-4 mm. in diameter, had appeared in the next year.

—H. W. W.

TARABINI, C. G. and GUILLEN, J. Manifestaciones similtuberculosas en hansenianos lepromatosos. (Lupus vulgaris, tuberculoides pápulo-necróticas, lesiones pulmonares.) [Tuberculosis-like manifestations in lepromatous leprosy.] *Rev. Leprol. Fontilles* **5** (1962) 635-640.

Tuberculoid leprosy often resembles certain forms of hyperergic tuberculosis, so



that it is not always possible to make a differential diagnosis exclusively by means of histopathologic examination. This confusion is not frequent in lepromatous leprosy, although it sometimes happens as in the two cases presented. One had lupiform lesions resembling lupus vulgaris, and the other had lesions of the follicularis type, similar to papulonecrotic tuberculid. Photographs demonstrate the conditions described.

—F. CONTRERAS

MONTESTRUC, E. Lèpre et ainhum. [Leprosy and ainhum.] Bull. Soc. Path. exot. **55** (1962) 742-746.

In the Island of Martinique, during a period of 15 years, the author has detected 5 cases of ainhum in individuals suffering from leprosy. The affection was limited to the fingers and toes innervated by the ulnar and the peroneus communis, the nerves most often involved in leprosy infection. The frequency is greater in toes than in fingers. The leprosy etiology of ainhum in these cases, although it is not the only possible causative factor, should not however be eliminated from consideration.—[From author's summary.]

JONQUIERES, E. D. L. and CAPURRO, E. T. Incidencia de fenómenos neurológicos en la lepra dimorfa. [Incidence of neurologic phenomena in dimorphous leprosy.] Leprológia **8** (1963) 48-49.

Attention is called to the low incidence of neurologic phenomena leading to disability among patients with dimorphous [borderline] leprosy. In a series of 54 such cases, with an average follow-up of 4 years, only 5.3% of them developed sequelae of this kind.

—AUTHOR'S ABSTRACT

SACHERI, R. F. Evolución de las lesiones nasales en el Mal de Hansen. [The evaluation of nasal lesions in leprosy.] Leprológia **8** (1963) 65-70.

Among other signs, epistaxis was found in 43.7% of 565 lepromatous patients in the Sanatorio Sommer, where numerous L3 cases are under treatment. Bacilli are assumed to reach the nasal mucosa by the blood stream, initial lesions being near the vascular macula of Kisselbach in the mucosa covering the cartilaginous septum. Perforations of the septum were found in 35.7% of the cases—E. D. L. JONQUIERES

PRICE, E. W. La prévention des infirmités dans la lèpre. [The prevention of deformities in leprosy.] Maroc Méd. **42** (1963) 532-534.

The author classes the infirmities due to leprosy according to their origin: loss of sensation, loss of muscle function, or bacillary invasion. He indicates many preventive measures, defines the role of the patient himself in the care of his condition, and emphasizes the necessity of regular medical control. He concludes that the greater part of the infirmities due to leprosy can be either prevented or corrected.—[From author's summary, supplied by N. Bourcart.]

CARRANZA-AMAYA, A. La lepra como causa de incapacidad en El Salvador; algunos datos estadísticos. [Leprosy as a cause of infirmity in El Salvador; statistical data.] Dermatología (Mexico) **6** (1962) 153-159.

This is a report of a study of 187 cases of leprosy with respect to deformities present and the resulting infirmities. The proportion of patients affected in various degrees was unexpectedly high, especially among the men, the percentages being 35.2 and 18.5 respectively. All but a few of these cases were lepromatous; a tabulation shows none found in 32 tuberculoid cases. A study of reflexes of the base of the tongue and the larynx, and the vomiting reflex, showed abolition [of one or more?] in over 80% of the cases.—[In part from author's summary.]

TAMAI, T. Some orthopedic aspects of social recovery in leprosy. La Lepro **31** (1962) 19-26 (in Japanese; English summary).

In recent years a substantial number of leprosy patients have been rehabilitated to society from hospitals, due to the fact that it is now possible to arrest the disease and then to give orthopedic treatment for disturbances of function and malformations of the extremities. Social rehabilitation, however, involves many difficulties peculiar to this

disease. Experience at the Kikuchi Keifu-en National Leprosarium is reported. In regard to the number of patients studied, 168 were rehabilitated to society between the years 1956 and 1961, especially after 1959. The dysfunctions and malformations of the extremities begin with paralysis and follow the pathologic changes of leprosy. Physical therapy must be started as soon as possible, for prevention and treatment of these conditions. If that does not give satisfactory results, surgical procedures must be used, as for example tendon-transfer, hinter arthrolysis and so on. It is very important not only to know the condition of muscles, bones, and joints, but also to understand the daily living requirements of the individual patient. Improvement of the function of the hand is the most important in making daily life easier. Roentgenograms of amputated legs are required for the application of prostheses, because of resorption, atrophy and addition of bone. The fixed drop-lip due to paralysis of the facial nerve may be treated surgically; several operations are mentioned. The personality of the patient is very important for social recovery in leprosy, as is the case with cripples generally. The patient is very different in personality from the healthy person, in regard to the somatic inferiority complex. He may have that complex even without malformation of the extremities; he may have a deep inferiority complex with cosmetic difficulties in the face; but child patients have no somatic inferiority complex in spite of severe dysfunction of extremities. It is concluded that the morbid condition of the patient which impedes social recovery must be treated not only somatically, but psychologically, and society must be orientated to accept these persons.—[From author's summary.]

LANGUILLON, J. Le traitement de la maladie de Hansen par un sulfamide: la sulfaméthoxy-pyridazine. A propos de 105 cas. [The treatment of leprosy by a sulfamide, sulfamethoxy-pyridazine; a report on 105 cases.] *Maroc Méd.* **42** (1963) 519-524.

The author has treated 105 new cases of leprosy, 29 lepromatous, and 76 tuberculoid or indeterminate, with sulfamethoxy-pyridazine for periods ranging from 1 to 3 years. Some of them were treated by the oral route (750 mgm. every 2 days), and the others intramuscularly (4 gm. of the acetyl form of the drug every 15 days). The results were found extremely interesting. Of the tuberculoid forms, 68.4% were cured in less than two years. Of the lepromatous forms, 61.2% were apparently cured in less than 3 years, but the lepromin reactions remained negative. These results, compared with those in 50 control cases treated with Disulone [DDS], lead the author to recommend sulfamethoxy-pyridazine for the treatment of leprosy. [But a shorter designation, easier to remember and to pronounce, is needed—as for example, SMP.—H. W. W.]—[From author's summary, supplied by N. Boucart.]

MERKLEN, F.-P. and COTTENOT, F. Essai d'un nouvel antibiotique, la rifamycine S.V., dans quelques cas de maladie de Hansen. [Trial of a new antibiotic, Rifamycin S.V., in some cases of leprosy.] *Bull. Soc. française Dermat. Syph.* **70** (1963) 528-532.

Rifamycin S.V. (one of the Rifamycin group of antibiotics developed by Lepetit, in Italy) was tried out in the preliminary tests reported on an unavoidably small scale, 3 untreated cases and 2 that had long been treated with various other drugs. Twice-daily intramuscular injections of 500 mgm. were given daily except Sundays. Simultaneous administration of the anti-inflammation drug Nivaquine permitted the inclusion of 2 new cases of reactional neural leprosy. Rifamycin caused improvement of the leprosy lesions, but troubles at the sites of injection necessitated suspension of the treatment in most of the cases. Details of the 5 cases treated are given.—H. W. W.

DHOPIE, A. M. and MAGAR, N.G. Serum proteins in leprosy. *Indian J. Med. Res.* **51** (1963) 476-487.

Previous investigations of the serum proteins, some of them by electrophoresis, have been extended by estimations of the various fractions of the proteins. Agar-gel electrophoresis was employed; the optical density of the separate protein fractions, stained by amido-black 10B, was determined by an electronic densitometer, and the areas were

measured by planimetry. This technic was applied to 80 samples from patients of various types of leprosy, with controls of normal persons. Marked and significant differences were found between the lepromatous and nonlepromatous types. In the lepromatous type the total proteins and the  $\gamma$ -globulin levels were higher, and the albumin levels were lower. The total protein values are within the normal range in early cases, but rise significantly with increased severity of the disease. There is reversal of the A/G ratio, to below 1.0 in advanced stages. No variations in the total protein or the  $\gamma$ -globulin values were found in nonlepromatous cases.—H. W. W.

BERGOT, J., NICOLI, J., ZIEGLER, P. and DEMARCHI, J. Étude électrophorétique et immuno-électrophorétique des protéines sériques dans la lèpre. [Electrophoresis and immunoelectrophoresis of the serum proteins in leprosy.] Bull. Soc. Path. exot. **55** (1962) 776-782.

Conventional electrophoresis allows the evaluation of the increase of the  $\gamma$ -globulins as a whole. Immunoelectrophoresis shows that this increase is due to a simultaneous increase of  $\beta_2$ M and  $\gamma$ -globulins. However, the three conventional forms of the disease differ significantly in this respect; in the lepromatous and indeterminate forms the increase of  $\beta_2$ M remains moderate, while in the tuberculoid forms the reaction is more heterogeneous and massive increase of  $\beta_2$ M may be observed, similar to what has been reported in other tropical affections. The  $\beta_2$ M globulins of these various cases are immunologically identical. [From authors' summary.]

PAPA, F. and MONTESTRUC, E. Contribution a l'étude des états inflammatoires dans la lèpre. (Les séromucoïdes perchlorosolubles.) [The inflammatory states in leprosy; the perchloro-soluble seromucoids.] Bull. Soc. Path. exot. **55** (1962) 746-751.

The results obtained with the various biological tests are rather contradictory. The demonstration of the C-reactive protein, sometimes associated with the Waaler-Rose reaction and the VSG seems to be the most reliable method for the study of inflammatory conditions in patients suffering from these recurrent reactions and who must be submitted to a long term corticotherapy. This demonstration will allow one to follow the course of the disease and to determine the best antibacterial and anti-inflammatory therapy. —[From authors' summary.]

KUNDU, S., GHOSH, S. and SEN GUPTA, P. C. Histological observations on 'borderline' leprosy. Bull. Calcutta Sch. Trop. Med. **11** (1963) 148-151.

This report is of a study based on a study of formalin-fixed biopsy specimens from 30 active, untreated cases diagnosed as borderline. "To sum up," it is stated, "it may be said that tissue changes in borderline lesions were extremely variable and not always in conformity with clinical features and lepromin test." The association of lepromatous and tuberculoid elements with varying proportions of bacilli showed that the host-parasite relationship was in an extremely unstable state. Development of tuberculoid histology in subsequent biopsy specimens showed that the unstable state can be brought under control with the help of specific drugs. On the contrary, appearance of vacuolation (hydropic degeneration) in the giant cells showed that the unstable condition leads to lepromatous changes, probably through repeated reactions or due to a low immunologic status of the individual host. Borderline cases, clinically as well as histologically, should not be classed with reactional tuberculoid cases, for these show different clinical as well as histologic features.—H. W. W.

CONVIT, J. and GOHMAN, J. M. Positivity of the methylene blue test in xanthomatosis. Arch. Dermat. **88** (1963) 350.

As a continuation of the study reported in THE JOURNAL [**28** (1960) 233-238], of the retention of methylene blue injected intradermally by lepromatous but not tuberculoid lesions, the authors tried out this test on several skin diseases (such as deep mycoses, leishmaniasis, and treponematoses) with negative results. Then, on the hypothesis that it was an intracellular lipid that retained the color, the method was tried out on a case

of disseminated hypercholesterolemia xanthomatosis. The dosage was 5 cc. (of the 1% solution), increased later to 10 cc. When 70 cc. had been given a blue color appeared around the xanthomatous lesions, its intensity increasing and its extent spreading centripetally as the injections were continued, to a total of 110 cc. It is concluded that leprosy and xanthoma cells retain the color through the presence of similar lipid factors.

—H. W. W.

DE MELLO, P. H. Erythema nodosum leprosum e granuloma radiado de Miescher. [Erythema nodosum leprosum and the radial granuloma of Miescher.] *Rev. brasileira Leprol.* **30** (1962) 69-72.

In a search for Miescher's granuloma of ordinary erythema nodosum in erythema nodosum leprosum, 58 biopsy specimens from recent lesions were carefully examined, but in none of them was it found. The author points out that, after the early positive reports of Portugal and of Orbaneja, other workers have repeatedly failed to find the so-called radial granulomas in reactional lesions of leprosy. On the other hand, even in classical erythema nodosum there is not yet a general agreement regarding the frequency, histogenesis and significance of these structures. It is concluded, therefore, that the few positive findings reported must not be over-emphasized as evidence of identity between the two conditions.—[From author's summary.]

LOPEZ, B., RODRIGUEZ, T. and MARTINEZ, A. Un caso de epiteloma basocelular de dorso de nariz en un hanseniano. [A case of basal-cell epithelioma on the dorsum of the nose of a leprosy patient.] *Rev. Leprol. Fontilles* **5** (1962) 625-628.

A case is reported of basal cell epithelioma of the dorsum of the nose that was first treated by radiotherapy but relapsed after a few months. The tumor was then extirpated *en bloc*, including the cartilages, and the defect was covered with two flaps from the upper part of the nose. Cure was effected, with excellent esthetic result.—F. CONTRERAS

TERENCIO, J. Epitelioma espinocelular de labio en hanseniano. [Epithelioma spinocellulare of the lip in a leprosy patient.] *Rev. Leprol. Fontilles* **5** (1963) 737-739.

Report of another case of epithelioma, the lesion removed by the electric scalpel, with cure and excellent esthetic results.—F. CONTRERAS

BONOMO, L., DAMMACCO, F., PINTO, L. and BARBIERI, G. Thyroglobulin antibodies in leprosy. *Lancet* **2** (1963) 807-809.

In a study of sera from 50 cases of leprosy [type not stated], thyroglobulin antibodies were found in 21 (42%) in an agglutination test with thyroglobulin-coated latex, and in 19 (48%) of 41 sera tested for agglutination with tanned red blood-cells. There was no relation between the presence of these antibodies and the age of the patients or the duration of disease; there was a correlation between their presence and positive rheumatoid-like serum reactions. It is suggested that hypersensitivity of the antibody-forming system may be responsible for positive autoimmune-like reactions in leprosy.—[From authors' summary, in *Trop. Dis. Bull.* **61** (1964) 157.]

MERKLEN, F. P., MIKOL, C. and RENOUX, M. La séro-agglutination des particules de polystyrène-latex chargées d'histamine dans la lèpre. [Agglutination, in leprosy, of the particles of polystyrene latex charged with histamine.] *Bull. Soc. française Derm. Syph.* **70** (1963) 344-346.

The authors have employed in the study of leprosy a method of serum agglutination of particles of a polystyrene latex charged with histamine, which permits the demonstration, in the  $\gamma$ -globulins, of an antihistamine factor lacking in humoral allergy. Studying the sera from 45 cases (30 lepromatous, 12 tuberculoid, and 3 miscellaneous), they found no correlation between the reaction and the type of leprosy. Nor was there any correlation with the degree of evolution of the disease or with reactional outbreaks. This method, therefore, seems not useful in leprosy.—N. BOURCART

BUCK, A. A. and HASENCLEVER, H. F. The influence of leprosy on delayed-type skin reactions and serum agglutination titers to *Candida albicans*. A comparative



study of patients with lepromatous and tuberculoid leprosy and controls in Ethiopia. *American J. Hyg.* **77** (1963) 305-316.

These skin tests were made with a 1:100 dilution of a Seitz-filtered, 21-day-old culture of *Candida albicans*, to which 0.45% phenol had been added; the readings were made 48 hours after intradermal injection of 0.1 cc. The percentages of positive reactors to this antigen were 14.5% of 110 lepromatous cases and 10.4% of 77 tuberculoids; of 119 venereal clinic patients used for controls, 40.7% were positive. The agglutinin titers of the sera were determined with a suspension of this fungus. The percentages of patients with titers greater than 1:20 were 38.9% of 101 lepromatous and 11.5% of 77 tuberculoid cases; of 192 control patients, 14.1% gave such titers. The results of the agglutination test suggest that in lepromatous leprosy, although not in tuberculoid leprosy, there is hyperreactivity. In order to see whether this condition extended to other antibodies, the titers of the  $\alpha$  and  $\beta$  isoagglutinins of the blood groups were determined. In Group A patients with lepromatous leprosy the geometric mean titer for  $\beta$  agglutinins was 241.6, compared with 170.4 in the tuberculoid patients and 138.6 in the controls; the titers for  $\alpha$  agglutinins in the patients of Group B were 167.2, 141.7 and 97.8, respectively. No difference was seen in  $\alpha$  and  $\beta$  agglutinin titers in the Group O patients. The authors suggest that in patients with leprosy there is either a direct suppression of delayed-type skin reactions, or a skin or constitutional change that interferes with the skin reaction, and that in lepromatous leprosy there is a tendency to serologic hyperreactivity.—[From abstract by S. R. M. Bushby in *Trop. Dis. Bull.* **61** (1964) 49-50.]

LANGUILLON, J. and PFRIER, H. Le lépromino-réaction des sujets contacts en Afrique Occidentale. [The lepromin reaction among contacts in West Africa.] *Bull. Soc. Path. exot.* **56** (1963) 337-345.

This study, made in villages in the region of Bamako, has shown that contacts with tuberculosis cannot alone be held responsible for the high proportion of positive Mitsuda reactions obtained there (70.7% of the 885 persons tested). Apart from the possible role of paratubercle bacilli, the role of the Hansen bacillus must be great, for in view of the prevalence of leprosy (11-17 per mille) all of the healthy subjects may be considered as contacts. This very important proportion of Mitsuda positives is probably the reason for the very low percentage of lepromatous cases (8-12%) in West Africa.

—N. BOURCART

SOUZA CAMPOS, N., LESER, W., BECHELLI, L. M., QUAGLIATO, R. and ROTBERG, A. Viragem da lepromino-reação em função de diferentes estímulos. Influência da idade nessa viragem, no grupo etário de 6 a 43 meses. [Change of the lepromin reaction as a result of different stimuli. Influence of age in a group 6 to 43 months old.] *Rev. brasileira Leprol.* **30** (1962) 3-20.

Among tuberculin-negative children 6 to 34 months of age, the intensity of the lepromin reaction was significantly greater in those who had previously received BCG than in those who had not received it. The intensity of the reactions after BCG did not differ significantly whether that vaccine had been administered intradermally or orally. In the non-BCG children there was no significant difference as to intensity of the lepromin reaction among those who were previously injected with lepromin—3 times at intervals of 1 month—and those of the control group. There was no significant sex difference in intensity of reaction. Children receiving BCG intradermally did not show any significant correlation between the intensity of reactivity and subsequent age, but those who had received oral BCG showed a significant decrease in reactivity with age. Children who had previously been tested with lepromin, and were given oral BCG later, when 16-43 months old, gave Mitsuda reactions whose intensity did not significantly depend on the previous reactivity or on treatment received; once more there was a highly significant negative correlation between the intensity of reaction and age.—[From authors' conclusions.]

MIRANDA, R. N., GROSCOE, L. F. K. and SHUBERT, W. A. Lepromino-reação comparada com injeção de extrato de pele normal. [The lepromin reaction compared with

that to injection of extracts of normal skin.] Publ. Cent. Est. Leprol. (Paraná) **2** (1962) 24-29.

Comparative tests were made of intradermal reactions to lepromin and to a suspension of normal skin prepared by the Mitsuda-Hayashi method, in 43 leprosy patients of various types and 6 nonleprosy persons. The results of the tests were observed after 48 hours and 28 days. In no instance did the normal skin suspension cause an early reaction of the Fernandez type. However after 28 days, those injections resulted in Mitsuda-like reactions in 91% of the persons who were positive to lepromin, with about 40% of the intensity of the lepromin reactions. Histologic examination of the reaction lesions in one nonleprosy person taken after 24 hours, revealed tuberculoid granulomas in both the lepromin lesion and in that produced by the normal skin suspension.

—[From authors' summary.]

GHOSH, S. and MUKERJEE, N. Intradermal reaction in leprosy cases with an antigen prepared from bovine type of tubercle bacillus. Bull. Calcutta Sch. Trop. Med. **10** (1962) 159-160.

This brief note results from a search for a substitute for lepromin, since sulfone treatment has rendered suitable material difficult to obtain. It has been shown (Abe) that there are two types of antigenic lipids in lepromin: (a) a phospholipid similar in action to a 1:1 mixture of cardiolipin and lecithin, and (b) a lipopolysaccharide whose polysaccharide part has serologic activity in common with tuberculin polysaccharide. The authors used a bovine tuberculosis culture to prepare an antigen by the Dharmendra technique, the tests with which in 310 cases were controlled with Dharmendra's leprosy antigen. Both gave negative reactions in 129 lepromatous, 13 borderline, and 18 maculoanesthetic cases, while the tuberculosis antigen gave positive reactions in all of the 138 tuberculoid cases—of which 17 were negative to the Dharmendra antigen—and in all of 12 indeterminate cases in all of which Dharmendra was negative. Further study is in progress.—H. W. W.

CONSIGLI, C. A. Leprosy and tuberculosis. Estudio correlativo de los fenómenos de hipersensibilidad. [Leprosy and tuberculosis; comparative study of hypersensitivity phenomena.] Leprológia **8** (1963) 13-20.

The total proteic leprolin LPT of Olmos Castro and Arcuri is an ideal antigen to test for hypersensitivity in leprosy because it is not sensitizing, is easy to prepare, and keeps its antigenic power for a long time. Its similarity to tuberculin makes it useful for comparative immunoallergic experiments between leprosy and tuberculosis. With this antigen the index of positivity of the early (Fernández) reaction is high in people who live in contact with positive cases, but very low in people who do not live with leprosy patients, in people who live together with negative cases and also in the lepromatous, indeterminate and dimorphous [borderline] types of leprosy. These facts show the high specificity of LPT. The percentages of coincidences which have been found between the Mantoux and the Fernández reactions are low as compared with the results of other investigators working with similar human groups but with different antigens. This fact is held not to contradict the hypothesis of cosensitization between *M. leprae* and *M. tuberculosis*; it can be explained by taking into account the fact that group hypersensitivity gradually disappears, and then the tuberculin-positive cases that were sensitized a long time before now react to the proteic antigens in a specific monovalent form and not in a group-specific form.—E. D. L. JONQUIERES

MONTESTRUC, E. Ou en est le problème de l'immunité antilepreuse? Que peut-on attendre pratiquement de nos connaissances actuelles en immunologie lépreuse? [Wherein is the problem of antileprosy immunity? What can one expect practically of our present knowledge of the immunity of leprosy?] Maroc Méd. **42** (1963) 525-528.

The author raises the problem of immunity in leprosy in the light of our knowledge of immunity in tuberculosis, with reference to the antigenic relationship of the two bacilli. He establishes a parallel between the reaction of Fernández and the tuberculin

reaction, and also between the Mitsuda reaction and the Koch phenomenon. On review of the technical modifications proposed to augment the sensitivity and specificity of lepromin, he concludes that the standard Mitsuda-Hayashi preparation is the best. He believes that the tissue elements contained in lepromin undoubtedly play a role in the reaction, as it is known and interpreted, and that it would be a mistake to try to eliminate them. The rare accidents "of excess" due to whole lepromin, seem to him much less troublesome than the faults observed with the purified lepromins. He emphasizes the practical interest of the lepromin reaction in the diagnosis of the forms of leprosy, the indication of the duration of treatment, and the surveillance of apparently cured cases. Finally, he reviews the role and behavior of BCG vaccination in leprosy prophylaxis.

—N. BOURCART

- ✓ JONQUIERES, E. D. L. BCG en lepra dimorfa. [BCG in dimorphous leprosy.] *Leprológia* **8** (1963) 45-47.

An attempt was made, with BGG to make positive negative reactions, or to enhance weakly positive reactions in dimorphous [borderline] cases. The results were sufficiently interesting to encourage a more complete experiment, but the small number of patients (13) in the experiment does not permit definite conclusions. (Two years after this experiment only 1 case maintained definite positivity.)—AUTHOR'S ABSTRACT

- ✓ IMAEDA, T. Récentes investigations sur la morphologie du *Mycobactérium leprae*. [Recent investigations on the morphology of *Mycobacterium leprae*.] *Maroc Méd.* **42** (1963) 511-518.

Examination by the electron microscope shows that the internal structure of *M. leprae* is closely similar to that of other mycobacteria. There is first, a cell membrane surrounding the entire bacillus, and inside that a double-layered plasma membrane which, when it penetrates the cytoplasm, constitutes the intracytoplasmic membranous apparatus. In the cytoplasm are also found the nuclear apparatus and the intracytoplasmic corpuscles. These structures are seen in the intact bacilli; in the degenerating individuals the cytoplasm is retracted and the various constituents can no longer be distinguished. The cell membrane, however, is nearly always unchanged. Intact bacilli are seen especially in borderline leprosy, where the bacterial activity and the cellular reactivity are perhaps balanced.—N. BOURCART

- 4c IMAEDA, T. Estudio bacteriológico y patológico de la lepra con el microscopio electrónico. [Bacteriologic and pathologic study of leprosy with the electron microscope.] *Acta Cient. Venezolana* **14** (1963), Suppl. 1, pp. 184-193.

This publication, a separately paginated supplement entitled *Archivo Cuatrienal 1959-1963*, includes (in Spanish) an article the greater part of which was presented at the VIIIth International Congress of Microbiology, held in Montreal in 1962. The following is from the English version of the author's summary. Based on ultrastructures observed in various leprosy lesions, it has been concluded that the growth of *M. leprae* is intimately related to the type of the disease. In the lepromatous type, the bacilli multiply very rapidly, with the formation of globi, because of the absence of tissue reaction. This bacterial growth may be identical to that of any other bacteria able to grow in culture media. That is, one can see various growth phases of *M. leprae*: the rapid growth stage probably corresponding to the exponential phase, the stationary stage, and the declining stage. It seems that bacterial death in lepromas is not due to any tissue inhibitor, but rather to lack of nutrient media in the host cells. In the tuberculoid type, the bacilli only appear in the initial stage of the reaction. They show a tendency to multiply, but soon undergo degeneration caused by the strong tissue reaction. In other words, bacterial death in tuberculoid leprosy lesions may result from some bactericidal substance present in the host cells. In the borderline group the bacilli grow very slowly in host cells. The bacterial growth and the tissue inhibitor in borderline lesions may be balanced for some time. Once the balance ceases the bacterial growth may be deviated to that of the lepromatous or the tuberculoid type.—H. W. W.

GANGULI, S. The bacteriological study of acid-fast mycobacteria isolated from human lepromatous leprosy. *Indian J. Med. Sci.* **17** (1963) 740-744.

A bacteriologic study was made of 4 essentially similar strains of mycobacteria isolated from patients with lepromatous leprosy by culture on conventional media, and a description of their morphologic, cultural and metabolic characteristics is given. Optimum growth was obtained on Dubos fluid medium at 37°C. The organisms were avirulent in mice, rats, guinea-pigs, rabbits and pigeons. Two strains tested against drugs and antiseptics proved to be resistant to streptomycin and isoniazid. Antigens prepared from these 2 resistant strains were tested in various ways against 7 sera from patients with lepromatous leprosy; the results were inconclusive.—[From abstract by D. S. Ridley in *Trop. Dis. Bull.* **61** (1964) 156.]

MERKLEN, F. P., RENOUX, M. and BRISCHOUX, M. Mise en évidence du bacille de Hansen dans une lésion tuberculoïde par broyage, concentration et microscopie de fluorescence. [Demonstration of the leprosy bacillus in a tuberculoid lesion by grinding, concentration, and fluorescence microscopy.] *Bull. Soc. française Derm. Syph.* **69** (1962) 876-878.

The authors have employed the technic described by Nerurkar and Khanolkar: grinding of a piece of the cutaneous lesion, concentration with ether, and examination by fluorescence microscopy after coloration with auramine O. They believe that staining by a mixture of auramine and rhodamine is clearly superior to that with auramine alone. This technic, although delicate, has permitted the demonstration of the leprosy bacillus in tuberculoid lesions which, with the usual technics, seemed to confirm its classical absence.—N. BOURCART

WILKINSON, F. F. Inoculación vegetal. Intento realizado con *Mycobacterium leprae*. [Trial of inoculation of *M. leprae* into vegetables.] *Leprológia* **8** (1963) 21-24.

An attempt at inoculation of *M. leprae*, obtained from lepromata and free of tissue debris, into the root of growing *Phaseolus vulgaris* was made. A seed of that vegetable was included in a cotton bed wet with sterile distilled water in a sterile tube. As the roots were growing, the inoculations were made. Thirteen days after the inoculations, turbidity of the water was noted. Examination of the water after Ziehl-Neelsen staining showed acid-fast cells and short acid-fast bacilli, cyanofil granules, and elliptic bacteria with blue borders and red centers. These bacteria were similar to *Bacillus proptermariam*, a new germ found by the authors in leprosy patients (see the next abstract). No conclusion is yet given.—E. D. L. JONQUIERES

WILKINSON, F. F., GAGO, J. and SANTABAYA, E. Germen del género *Bacillus* hallado en enfermos de lepra. [Germ of the bacillus type found in leprosy patients.] *Leprológia* **8** (1963) 25-40.

A new bacillus, *Bacillus proptermariam*, was found in 50 leprosy cases (47 lepromatous, 2 tuberculoid and 1 indeterminate). The same bacillus was detected in all of the leprosy contacts studied. It was not found in noncontact persons with other dermatoses. The possibility that this bacillus may be a predecessor of *M. leprae*, or an initial stage in its development, is being studied.—E. D. L. JONQUIERES

HART, P. D'A and VALENTINE, R. C. Growth (without multiplication) of *Mycobacterium lepraemurium* in cell-free medium. *J. Gen. Microbiol.* **32** (1963) 43-53.

In an earlier paper the authors showed that *Mycobacterium lepraemurium*, when incubated in a modified Dubos medium containing 10% sucrose, increased in length but did not divide. In the present paper they report that the rate of elongation could be accelerated by increasing the casamino acids 6 times and the asparagine 25 times, and by reducing the sucrose to 7.4%. The pH value of the medium was critical. Maximum elongation, to 4  $\mu$  and best survival, occurred around pH 6.2; virtually no elongation and very poor survival occurred at pH 5.0 and pH 7.2. Sources of carbon other than sucrose were apparently of no advantage; in the absence of sucrose elongation occurred less regularly and was diminished; the omission of asparagine and casamino acids also



reduced the lengthening. Electron micrographs showed that elongation was accompanied by an increase in the weight of the bacillus; an increase in length from  $2.1 \mu$  to  $4.6 \mu$  was accompanied by an increase in weight from  $5.9 \times 10^{-11}$  mgm. to  $12.0 \times 10^{-11}$  mgm. during 14 days' incubation. Exposure of the bacilli to alkali decreased their ability to lengthen; exposure to acid was less harmful. No elongation occurred at  $42^{\circ}\text{C}$  or  $24^{\circ}\text{C}$  and it was slightly less at  $34^{\circ}\text{C}$  than at  $37^{\circ}\text{C}$ . The results of experiments designed to eliminate tissue constituents from the inoculum suggested that elongation was not dependent on tissue residues. Isoniazid in concentrations of  $1 \mu\text{gm. per cc.}$  suppressed the elongation of normal bacilli, but not those derived from mice which had been treated with the drug; for the latter  $25 \mu\text{gm. per cc.}$  was necessary to inhibit lengthening. Evidence of multiplication was obtained by direct counts of the cultures, but the authors are convinced that elongation is an active process similar to that seen with bacilli in the tissues of animals soon after inoculation.—[From abstract by S. R. M. Bushby in *Trop. Dis. Bull.* **61** (1964) 51-52.]

NISHIMURA, S., ITO, T., MORI, T. and KOSAKA, K. Serial passage of murine leprosy bacillus in testicular tissue of the rat and mouse. Fundamental studies on the cultivation of human and murine leprosy bacilli (2). *La Lepro* **31** (1962) 1-4 (in Japanese; English summary).

Although it is difficult to determine the generation time required for proliferation of the murine leprosy bacillus because of the influence of complex inhibitory factors and growth factors of the host, it is possible to calculate a rough estimate of the number of days. The authors inoculated mice and rats intratesticularly with a constant number of murine bacilli, resected and emulsified the testes after a set interval, and counted the number of organisms in smears, obtaining the following results. In the mouse testes 7.7 days were required for 1 generation, and 4-5.5 days in the rat.

—[From authors' summary.]