CURRENT LITERATURE

This department carries selected abstracts of articles, published in current medical journals, dealing with leprosy and other mycobacterial diseases. Abstracts are supplied by members of the Editorial Board and Contributing Editors, or are reproduced, with permission, from other abstracting journals.

Carayon, A., Bourges, M., Bourrel, P. and Languillon, J. Les nevrites lepreuses hyperalgiques (a propos de 20 observations). [Hyperalgesic neuritis of leprosy (a report on 20 patients).] Bull. Soc. Med. Afrique Noire Langue Française (Dakar) 9 (1964) 226-230.

The authors studied hyperalgesic neuritis in 20 patients with leprosy. Over 7 years they noted 49 painful neuritis syndromes. Leaving aside the articular and bony pains the authors concentrated on the nerve pains, and classified them in 4 types: (1) absence of spontaneous pain, yet pain present when provoked by pressure on the hypertrophied nerve; (2) hyperalgesia in the skin area, or a hyperalgesic zone alongside zones of anesthesia; (3) areas of spontaneous pain periodically manifest in the absence of treatment or after general and focal treatment; (4) intense pains radiating downward, of which some were diffuse and aggravated by focal stimuli such as pressure on the nerve, or peripherally elicited by touching the hyperalgesic zone. The incidence of hyperalgesic neuritis is small. There were only 20 patients, out of 700 with nerve involvement (2.6%). The phenomenon is based on dissociation of sensitive fibers. Weddell refers to a constant "turn over" in leprosy nerve fibers, with a mixture of degeneration and infraclinical regeneration. These fibers are more susceptible to excitation and compression. The fibrous nature of compression inside the nerve trunk and outside it in the diffuse lesion is indubitable. Disturbance in the vasomotor apparatus of the extremities is important when causalgia is present. In their 20 patients recently studied the authors found 12 had lepromatous leprosy and of those with the nonlepromatous type there were 5 tuberculoid and 3 indeterminate. Histologically the infections were mostly of the reactional type. The site of the neuritis was mainly in the ulnar nerve, less so in the median, and there were a few examples of the involvement of more than one site in the same nerve. Edema, thickening and abscess of nerves occurred. In treating hyperalgesic neuritis the chief aim is to combat the compression, which is the main factor in the causation of pain. This is due, within the nerve trunk, to the interstitial edema produced by the proliferation by the leprotic cells, by the Schwann cells becoming phagocytes, and more rarely by abscess formation. Extrinsically there may be thickening of tissues around the nerve trunk and the thickening of the nerve has an added strangling effect in the thickening of the fibrous canals. The dissociation of the fibers of sensation results from compression. The next important aim is to combat demyelinization by the promotion of regeneration. The third point is the avoidance of every useless drug and every useless maneuver. Sulfones do the most damage, and the sulfonamides and thioureas have the most advantages. The authors have even been able to obtain functional recovery from leprosy neuritis, with Sultirene, in 3 patients. Immobilization of the limb is recommended, and edema and sclerosis within the nerve trunk are dealt with by means of corticoids and hyaluronidase. These drugs give considerable improvement in minor pains and temporary improvement in major pains. Analgesics may be used, and chlorpromazine is a valuable aid. For protection against the demyelinization of fibers in regeneration the authors suggest infiltrations of the sympathetic nervous system, the use of vitamins B1, B6, and B12, and placental implants. Surgical decompression is applied in certain cases, or debridement of the fibrous canals. There are some ischemic dangers in recapsulation. The fascicular neurolysis described by the senior author gives the

greatest decompression without ischemic risk. There are other surgical methods for the relief of pain in neuritis. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 419-420.]

Browne, S. G. Nerve abscesses in African Leprosy. Leprosy Rev. **36** (1965) 55-57.

The clinical features of three cases of nerve abscess seen in about 8,000 patients in Eastern Nigeria, are reviewed. The comparative rarity of the condition in Africa is emphasized. The variability of the symptomatology, of the findings at operation, and of the macroscopic and microscopic appearances, are all worthy of mention.—AUTHOR'S SUMMARY.

Browne, S. G. Red and black pigmentation developing during treatment of leprosy with B.663. Leprosy Rev. **36** (1965) 17-20.

The changes in skin color remarked during treatment with B.663 of patients with lepromatous (26) or borderline (2) leprosy, have been briefly referred to in published reports (Browne and Hogerzeil, *Leprosy Rev.* **33** (1962) 6; 182). This paper records in greater detail certain features both of the ruddiness and of the black coloration. Apart from the obvious bearing of this pigmentation on the acceptability of B.663, its development presents features of some pathologic interest. Unlike the reported findings in animals receiving isoniazid in addition to B.663 (Chang, *Antimicrobial Agents & Chemotherapy* (1962) 294), the appearance of the ruddiness and hyperpigmentation was not postponed in those patients taking another drug (dapsone, or dapsone and ditophal) in addition to B.663, nor was the apparent intensity of the red or the black pigmentation modified. The widespread staining of the tissues by the safranins and the presence of microcrystals of B.663 in macrophages as well as extracellularly, do not appear to induce any cellular response in the experimental animal beyond a slight foreign body reaction. No local or systemic toxic effects at comparable dosages have been observed, nor has any carcinogenic effect been seen on prolonged administration of the drug. With long-continued high doses, however, the drug accumulates in the liver, and the possibility of toxic manifestations must not be overlooked (Shepard, personal communication, 1964; Chang, personal communication, 1964). That the hyperpigmentation may have a complex pathology, is suggested by the work of Knight (personal communication, 1964) and Wertlake (personal communication, 1964), who investigated two Mexican patients under treatment with B.663 at the National Institute of Allergy and Infectious Diseases, Washington. These workers were unable to detect significant differences in the amount of melanin pigment present in sections of skin taken from various sites, and suggest that a variable pattern may exist.

The hyperpigmentation is similar in some respects to that reported by Lowe (*Leprosy Rev.* **23** (1952) 22) in breast-fed babies whose mothers were taking dapsone. Doull (*Internat. J. Leprosy* **27** (1959) 385) noticed a hyperpigmentation virtually confined to areas of lepromatous infiltration in patients taking high doses of amodiaquin for long periods (Browne, *Internat. J. Leprosy* **29** (1961) 107). Some patients develop a generalized hypermelanosis following treatment with dapsone (Browne, *Trans. Roy. Soc. Trop. Med. & Hyg.* **53** (1959) 495; *Brit. Med. J.* **2** (1964) 1041), but in very few is the hyperpigmentation limited to skin affected by discrete or diffuse lepromatous infiltration. The hyperpigmentation observed in these patients under treatment with B.663 is unlike both the diffuse fixed eruption resulting from hypersensitivity and a generalized post-inflammatory hypermelanosis. In spite of the changes in skin color which might be objectionable in the lighter-hued, it is reassuring to observe that both the ruddiness and the hyperpigmentation diminish after the cessation of treatment and eventually disappear completely. [*From* author's summary.]

Browne, S. G. A varicelliform eruption appearing in the course of acute exacerbation of lepromatous leprosy. Leprosy Rev. **36** (1965) 35-36.

The author reports the appearance of a varicelliform eruption in a young male patient at the Uzuakoli Leprosy Settlement. It occurred on infiltrated skin lesions during acute exacerbation in lepromatous leprosy, and the vesicles contained numerous *Mycobacterium leprae*. The reaction subsided, all the lesions crusted over and scarred, and the patient resumed his interrupted clinical progress. The skin lesions that occur during acute exacerbation in lepromatous leprosy assume many and diverse forms, but this varicelliform eruption is one of the least common. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 420.]

Languillon, J. La sulfamidotherapie dans la lèpre (sulfamethoxypyridazine, acetylsulfamethoxypyridazine, sulfadimethoxine, acetylsulfamethoxypyrazine, Ro 4-4393. [Sulfonamide therapy in leprosy (sulfamethoxypyridazine, acetylsulfamethoxypyridazine, sulfadimethoxine, acetylsulfamethoxypyrazine, Ro 4-4393.] Med. Trop. (Marseilles) **24** (1964) 522-530.

After 6 years' experience with sulfonamides in the treatment of leprosy in Mali the author gives his results with 4 groups. In all, they were perfectly well tolerated, and provided a sufficient dose was given to maintain a blood level of 25 mgm. per liter, the therapeutic results were satisfactory. The author recalls that Chorine in France (*Bull. Acad. Med.* **126** (1942) 152) and Faget *et al.* in the U.S.A. (*Publ. Hlth. Rep.* **58** (1943) 1729-1741) were the first to try this type of drug, in 1942.

With sulfamethoxypyridazine (also known as Sultirene), used orally in a dose of 750 mgm. every 2 days, and also twice monthly injections of insoluble suspensions of 4 gm. in each 20 ml., the author found a quick and constant action on allergic types of the disease, so that in 76 patients treated for 2 years there were 52 patients cured (68.5%). Against the lepromatous types the sulfonamide drugs seemed more effective than the sulfones, so that 65.5% of patients were cured in less than 3 years. When comparison is made with groups of patients treated with sulfones, support is given to the fact that the sulfonamides are more advantageous, and in addition less lepra reactions were caused, and there seems to be a beneficial action on tuberculoid neuritis.

Sulfadimethoxine (or Madribon) was also used in a dosage of 750 mgm. orally every 2 days, and after 1 year's treatment half of the patients with either main type of the disease were cured.

Since 1961 the main trial has been with acetylsulfamethoxypyrazine (11589 RP or acetyl Kelfizine). With this, 75 patients of various clinical types have been treated at a dosage of 2.5 gm. a week orally, or intramuscularly 5 gm. twice a month. It had the same favorable action on cutaneous, mucous and nervous lesions, and a satisfactory bacteriologic control, and did not stimulate lepra reactions or signs of intolerance.

The author thinks sulfonamide therapy is intensely practical by allowing a long-acting sulfonamide level in the blood, and hence weekly distribution of an oral drug which is effective against leprosy. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 312.]

Browne, S. G. Toxic effects of prolonged high-dose dapsone self-medication. Leprosy Rev. **36** (1965) 53-54.

A case is reported in which an adult man had treated himself with a daily dose of 400 mgm. of dapsone six days a week for two years, suffering from severe damage to kidneys in consequence. The retarded cerebration noted was probably uremic in origin. The skin of the dorsa of hands and feet was hyperkeratotic, dry, and hyperpigmented.—Author's Summary.

Rosenthal, A. L. and Rathmell, T. K. Lepromatous Hansen's disease in a suburban community. Arch. Intern. Med. **115** (1965) 73-77.

The authors describe their experience in New Jersey in treating lepromatous leprosy in a woman aged 40 years. They describe the "dapsone syndrome" which occurs in persons who suddenly become acutely ill after taking dapsone for 5 to 6 weeks. The presenting sign is a papular or exfoliative

rash, accompanied by fever, malaise, and weakness. There may also be hepatomegaly, epigastric pain, lymphadenitis, and mononucleosis. The patient had a true leprosy reaction, the authors consider, rather than a dapsone syndome, which eventually they controlled with prednisone. A trial of quinacrine (mepacrine) for 9 days was unsuccessful. In retrospect, the initial dapsone treatment seems to have been too vigorous. Considering leprosy as a whole, the authors think that leprosy should no longer be regarded as a solely tropical disease but as a world-wide disease. The authors do not like the term "nasal smears" which should be replaced by "nasal scrapings." In the United States confinement to a leprosarium is voluntary. The treatment and observation should be continued over a period of many years. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 539.]

Browne, S. G. B.663, possible anti-inflammatory action in lepromatous leprosy. Leprosy Rev. **36** (1965) 9-11.

In a trial of B.663 in 26 patients with lepromatous leprosy in the Leprosy Research centre at Uzuakoli, Eastern Nigeria, the author was impressed with its suppressive effect on the development of acute exacerbation. This was the first clinical trial of this new drug, which is a phenazine dyestuff discovered by V. C. Barry and his colleagues and used in tuberculosis and other mycobacterial diseases (*Leprosy Rev.* **36** (1965) 3-7). It was noted that only 2 of 26 participating patients suffering from lepromatous leprosy developed any symptoms of acute exacerbation while receiving the drug. In both patients the attack was slight and transient and occurred during the first month of treatment. On the other hand the well-attested severer occurrence under standard dapsone treatment was evident, when 14 of the patients given dapsone subsequently passed through typical clinical manifestation of erythema nodosum leprosum. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 422.]

Browne, S. G. Treatment of leprosy with B.663. Appraisal of the pilot trial after three years. Leprosy Rev. **36** (1965) 13-15.

The total number of patients was 28, of whom 26 had lepromatous and the remaining 2 had borderline leprosy. This group improved more consistently and more rapidly than any similar group previously experienced directly by the author. Twenty patients were given 300 mgm. B.663 daily (5-6 mgm./kgm. body weight). Seven were given 200 mgm. daily (5.0 mgm./kgm.), and 1 patient received 100 mgm. daily (4.4 mgm./kgm.). The weight of drug given daily per kgm. ranged from 4.4 mgm. to 6.8 mgm. Other drugs were given to certain patients, namely dapsone, ditophal, or both, but 7 patients had no drug other than B.663. The author found that B.663 had an undoubted action in lepromatous and borderline leprosy; the clinical and bacteriologic improvement was relatively rapid, and while taking the drug patients seemed much less liable to episodes of acute exacerbation. It was also noted that the risk of eye and nerve damage seemed to be reduced. A peculiar concomitant was the transitory and symptomless phenomenon of red coloration of the skin, and later hyperpigmentation, but it did not prove a contraindication among the patients in this trial. The author surmised that lower doses in relation to body weight might be equally effective in their general beneficial action, and still obviate acute exacerbation. In order to attempt to prevent the emergence of resistant forms the author suggests the use of dapsone or isoniazid in conjunction with B.663. The additive effect may accelerate the disappearance of normal-staining forms, as well as the clearance of nonviable and fragmented bacilli. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 422.]

Browne, S. G. A limited clinical trial of injectable thiambutosine (Ciba 1906). Leprosy Rev. **36** (1965) 21-22.

The author reports on the trial of a 20% suspension of thiambutosine in arachis oil, given to 4 patients at Uzuakoli, Eastern Nigeria. Of the patients, 2 had lepromatous leprosy and 2 had bacteriologically positive borderline leprosy. The dosage was 10 ml.

of the oily suspension every 2 weeks for 18 months, injected into the quadriceps extensor femoris. The injections were well tolerated and clinical and bacteriologic improvement was similar to that experienced with oral use of the drug. A practical point to be taken into account is the occasional separation of the drug from its vehicle, but there is a restricted area of usefulness for a well-tolerated injectable preparation as an alternative to dapsone. There was some indication of resistance during the second year of injected thiambutosine, similar to that recorded after the use of oral thiambutosine. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 421.]

Scarisbrick, D. A. The effect of 'Etisul' on the fragmentation of *M. leprae* in lepromatous leprosy. Leprosy Rev. **36** (1965) 75-76.

Within the limitations of this trial, no advantage was shown to follow the use of Etisul in lepromatous leprosy, when the patients were receiving DDS, improvement being judged by decrease in the bacillary index and increase in the percentage of fragmented bacilli in the patients' smears. In addition there seemed to be a real risk of toxic effects with Etisul treatment. The B.I. and the percentage fragmentation will be determined and compared again after an interval, in order to determine any late effects. The trial of Etisul lasted four months. [From author's summary.]

Mathur, J. S. and Saxena, K. N. Priscol in the treatment and prevention of leprosy deformities. Leprosy Rev. **36** (1965) 77-81.

Twelve leprosy patients with severe and six with moderate deformities and contractures were given intraneural priscol in conjunction with standard antileprosy treatment. All 18 cases except the three with severe deformities and contractures, showed excellent response. The three patients with severe deformities and contracture also showed improvement, and results in them were beneficial but mild. Priscol corrects early deformities completely and prevents further development of deformities and contractures.—Author's Summary.

Sheskin, J. Thalidomide in the treatment of lepra reactions. Clin. Pharmacol. & Therap. **6** (1965) 303-306.

An unexpected observation that Thalidomide (N-phthalimodoglutarimide), given as a sedative, mitgated lepra reactions, led to special study of its effect in six patients with lepromatous disease and severe lepra reactions in whom current conventional therapy (antimony and steroids) had been ineffective. Thalidomide in doses of approximately 100 mgm. t.i.d. (500 mgm. in one case) caused rapid subjective improvement, return of temperature to normal, and resorption of erythema nodosum-like lesions. Temporary placebo treatment for purposes of control indicated that the effect of the drug was real. It appeared to have a curative effect on reactional neuritis. The teratogenicity of the drug was kept in mind. No toxic effects were observed.—E. R. Long

Saul, A., Vargas, S. and Romero, E. La sulfometoxipiridazina en el tratamiento de la lepra. Primeras resultades obtenidos en Mexico. (Sulfamethoxypyridazine in the treatment of leprosy. First results in Mexico.) Dermatología (Mexico) **9** (1965) 37-52.

On the basis of studies by Languillon and Schneider sulfamethoxypyridazine was used in the treatment of 19 patients (18 lepromatous and one tuberculoid) at the Pascua Dermatologic Center. The drug was given orally in doses of 250 and 500 mgm. daily and parenterally in doses of 625 mgm. twice a week. It proved effective in all patients. The tuberculoid patient was cured in less than three months. All lepromatous patients showed clinical and bacteriologic improvement, and 7 of them were cured in the first 3 months. The drug was nontoxic, and lepra reactions were few and easy to control. It was concluded that sulfomethoxypyridazine is useful in the treatment of leprosy.—Author's Summary [*See also* abstract of thesis by Romero, G. E., *Internat. J. Leprosy* **33** (1965) 255.]

Griffiths, P. G. Isoxyl in the treatment of leprosy. A preliminary report. Leprosy Rev. **36** (1965) 23-26.

Isoxyl is 4-4′ diisoamyloxythiocarbanilide. The author mentions that Buu-Hoi, in 1954 (*Bull. Acad. Nat. Med.* **139** (1955) 275-280), reported good results with this drug against leprosy in Viet Nam, and with the diethoxythiocarbanilides. The author found that Isoxyl was readily obtainable, and began a trial in 12 patients with leprosy in Liteta Leprosarium, Zambia. Most of the patients had lepromatous leprosy and the duration of treatment in 7 of the patients was about 6 months. In that time all have shown very good or excellent clinical improvement, and bacteriologically most have shown some improvement; 1 patient suffered a mild exacerbation reaction. The dosage was 100 mgm. daily orally up to a maximum of 400 mgm. daily. The author, even by his short preliminary trial, confirms the results of Buu-Hoi and draws attention to the efficacy of this drug. [Abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 421.]

Jopling, W. H. Basic principles in carrying out a pilot therapeutic trial in leprosy. Leprosy Rev. **36** (1965) 69-71.

Principles are set forth for informative trial of a new drug. Patients selected for the trial should be of the lepromatous type, as such patients respond most poorly to treatment and lesions for observation are plentiful. For accuracy in determination of results they should not have had previous chemotherapy. For adequate supervision the trial should be carried out on inpatients. Preliminary tests should include records of the appearance of lesions and evidence of sensory and ocular impairment. Photographs for later comparison should be made. Standard general medical examination, with laboratory tests, is essential. The bacterial index is to be followed in successive (8 recommended) skin smears. Nasal smears are not recommended. The proportion of granular bacilli should be noted and recorded. A skin biopsy should be made to establish the type of leprosy. The lepromin test is not essential if the trial is confined, as it should be, to lepromatous, lepromin-negative patients. Schedules for numbering cases for record are presented, together with a program for daily, weekly, monthly, three-monthly and six-monthly observations. A problem offering some difficulty is the lepra reaction. The ideal course is to continue antileprosy treatment and use all means, including steroids, to control the reaction. Untoward results should be reported promptly. Suitable use of alternate patients as placebo controls enables the trial of a drug to control lepra reaction. Instead of placebo alone two aspirin tablets may be given three times a day to those in the control series. In effect such a trial is one of the drug in question versus aspirin.—E. R. Long.

Noordeen, S. K. Statistical considerations in clinical trials with particular reference to leprosy. Leprosy in India **37** (1965) 10-16.

Statistical considerations in drug trials are discussed under four heads: objectives, planning, trial proper, and analysis. The need for proper statistically oriented drug trials in leprosy is emphasized. It is also necessary to clearly define the objectives of a drug trial, and keep in view the comparative purpose of trials. Planning of drug trials has two aspects—one that would lay down the plan of procedures and the other the actual statistical planning. Statistical planning will depend upon satisfying certain prerequisites dealing with variability of patients, formation of groups, and required level of sensitivity. The four essential aspects of statistical planning deal with controls, randomization, number of patients and trial design. The importance of controls and the frequent absence of controls in drug trials in leprosy is discussed next. Historical controls, controls compiled after a trial is over, and the same patient being the control, are considered undesirable. Concurrent controls are the best. The necessity for randomization while allotting patients to various treatments is emphasized, and the procedures for randomizing are mentioned. The choice of number of patients required for any trial

depends on the prerequisites and trial design and on this the approach can be quite flexible. The various experimental or trial designs that can be used in leprosy are mentioned, and the merits and suitability of each design are discussed. In the trial proper the most important consideration is assessment or measurement. The double blind method to eliminate bias is described. The various quantitative measures used in assessing clinical and bacteriologic progress in leprosy and their limitations are discussed. In the last stage dealing with analysis, the ultimate object is to find out if a difference observed between two treatments is "true" or due to play of chance. The calculation of this chance by means of statistical significance tests is discussed. —AUTHORS' SUMMARY

Asomoza, M. A. Hospitalización del enfermo hanseniano. (Hospitalization of the patient with Hansen's disease.) Dermatología (Mexico) **9** (1965) 91-96.

Human concepts undergo continuous evolution, with repeated modification from their original form. This applies to the treatment of leprosy, a disease afflicting some 10 million cases in the world. About 18,000 cases are registered in Mexico. Sulfone treatment has greatly improved the outlook for all leprosy patients. The modern trend in the antileprosy campaign is to obtain full cooperation from practicing physicians and paramedical workers and utilize general hospital services and community welfare centers, as the major responsible elements in the program. Primary preference is given to treatment of patients at home, a course avoiding separation from their families and occupational and social environments. Mobile units serve rural districts, while health and dermatologic centers serve this purpose in cities. Medical treatment and instruction in personal hygiene are thus provided on a broad scale. Hospital services, including surgical care, are available for episodes requiring institutional treatment. The organization of the several services of this character is described. Arrangements are in effect for outpatient visit at hospitals; correlation is assured for specific and general dermatologic consultation. Integrated in the total program is the leprosarium Dr. Pedro Lopez in Zoquiapan, State of Mexico, which was founded in 1939; it represents practice prevalent at the time for the care of leprosy, which is now considered anachronistic. This institution houses patients with pronounced physical and psychic disability and continues to pose numerous problems.—E. R. LONG

Padma, M. N. Choice of sites for routine smearing. Leprosy in India **37** (1965) 87-90.

An investigation was conducted in 109 patients who were suffering from different types of leprosy, by taking smears from ear lobes, nasal septum and buttocks, and the results were compared and analyzed. It was found that ear lobes yielded the maximum number of positive results, buttocks slightly less and nasal smears yielded the least number of positive smears. Therefore it is suggested that nasal smears need not be taken as a routine in all cases. Certain drawbacks of nasal smearing, including some practical difficulties, are also mentioned.—AUTHOR'S SUMMARY

Gideon, H. and Job, C. K. Skin smears in leprosy. Leprosy in India **37** (1965) 74-86.

Skin smears for acid-fast bacilli for 942 males and 452 females examined at the Schieffelin Leprosy Research Sanatorium, Karigiri, South India, were analyzed with the object of determining the sites where acid-fast bacilli occur most frequently. Smears from the face appeared to be the sites where acid-fast bacilli occurred most frequently, the ear being the best. Smears from the trunk, chest and back seemed to represent the areas where acid-fast bacilli occurred least frequently.—AUTHOR'S SUMMARY.

Lennox, W. M. The surgical management of foot deformities in leprosy Leprosy Rev. **36** (1965) 27-34.

The management of leprosy foot defor-

mities which are closely associated with trophic ulcers, is described. Emphasis is placed upon reconstructive and salvage procedures rather than upon amputation.—AUTHOR'S SUMMARY.

Walkey, G. B. R. and Williams, H. W. The rapid healing of plantar ulcers. Leprosy Rev. **36** (1965) 83-85.

A technic for excision and grafting of plantar ulcers is described, which gives healing in 20 days in two-thirds of all cases. Over the total this gives a percentage of 75% healed at the first operation and 90% after two. In the latter case the period has been four to five weeks. Of the remaining 10% a few were complicated cases at first missed, but several have been large deep lesions of the heel of the type described by Lennox. In these we have eventually secured healing. It must also be added that even when counted unsuccessful at the first attempt, the size is usually much reduced by partial take. All of the early cases in this series were transferred from leprosaria, but, as the program has become known, patients have walked in as outpatients to disclose ulcers of many years' standing hidden by footwear.—AUTHORS' SUMMARY

Clezy, J. K. A. Surgery of leprosy. Papua & New Guinea Med. J. **8** (1965) 60-61.

This paper describes briefly the author's experience in treating leprosy deformities in the departments of surgery of the Schieffelin Leprosy Research Sanatorium attached to the Christian Medical College in Vellore, Madras State, India, under Dr. Paul W. Brand, and clinics in Bombay for facial surgery under Dr. N. H. Antia. The untoward circumstances under which Indian patients come to these clinics for treatment, and return home by various means of public transportation, are described. The author contrasts sharply the pertinent social factors prevailing in India in comparison with those prevalent in New Guinea. In the latter there is relatively little poverty and no significant stigma attached to leprosy. The Health Department is active in leprosy control, and medical students are taught essential elements for care of the disease. It is recognized that they must be well oriented in the special surgical procedures required, in order to meet the leprosy problem on an adequate basis.—E. R. LONG

Saul, A. and Diaz, M. Lepra y herencia. (Leprosy and heredity.) Dermatología (Mexico) **9** (1965) 157-169.

Leprosy is infectious and transmissible, but is not considered a hereditary disease. Its attack incidence is low, and it is essentially familial with intradomiciliary acquisition. However, a hereditary factor exists, which determines whether a person living under conditions favorable to infection will or will not acquire the disease, and if he does what type he will develop. It is thought that an irregularly dominant hereditary factor P, which neutralizes resistance (Factor N of Rotberg), is responsible for the acquisition of lepromatous leprosy. In general it may be said that a person exposed to the infection, in whose family there have been no previous cases of the disease, will either show a positive Mitsuda test or acquire the tuberculoid form. Three aspects were studied in the work here reported, which included 1,000 subjects, their relation to ten families in which leprosy occurred, and the problem of conjugal leprosy. The results seem to confirm the aforementioned hypothesis, but further observations are essential.—AUTHORS' SUMMARY

Iyer, C. G. S. and Nath, P. B. Histopathological features of reactions in lepromatous leprosy. Leprosy in India **27** (1965) 4-9.

The histopathologic findings in a series of 42 cases of lepra reaction are presented. This series includes 19 cases of erythema nodosum leprosum, 7 cases of acute exacerbation, and 16 cases of subcutaneous nodulation. The basic histopathologic picture in the first and second groups of this series was an inflammation seen on the background of a pre-existent lepromatous exudate. In the third group, there was considerable fibrous tissue formation enmeshing the previous inflammatory exudate.

Deep subcutaneous nodules were found to be the result of similar inflammatory changes in a lymph node, nerves and muscles. The histopathologic findings in these cases are compared with those reported in erythema nodosum occurring in other illnesses and their possible significance is discussed with reference to the literature.—AUTHORS' SUMMARY

Wheeler, E. A., Hamilton, E. G. and Herman, D. J. An improved technique for the histopathological diagnosis and classification of leprosy. Leprosy Rev. **36** (1965) 37-39.

A combined Masson's trichrome and Fite-Faraco ("Triff") stain is described, by means of which histopathology and acid-fast bacilli may be studied together in one section. This is advantageous for convenience, for demonstration purposes and for the study of the relationship of bacillus to host tissue. The section is stained first by the Fite-Faraco technic and then, after it is washed, with the trichrome stain. Finally, in contrast to the Fite-Faraco procedure, the section is dehydrated in alcohol before clearing and mounting. The technic is described. The red bacilli stand out against the yellow-colored collagen. The authors do not say whether the staining of bacilli is quantitatively complete; but they recommend that sections containing acid-fast bacilli be stained as controls with each batch, or in doubtful cases that a Fite-Faraco stain be done in addition [Abstract by D. S. Ridley, *Trop. Dis. Bull.* **62** (1965) 418.]

Allen, J. M., Brieger, E. M. and Rees, R. J. W. Electron microscopy of the host-cell parasite relation in murine leprosy. J. Path. & Bact. **89** (1965) 301-306.

The reaction of host cells to *Mycobacterium lepraemurium* was studied in the spleens of experimentally infected mice from the first to the fifth month. Bacilli were found by electron microscopy to be confined within the cytoplasm of the histiocytes. By the fifth month bacilli were separated from the cytoplasm by a peribacillary space bounded by a membrane. Beyond this, in the cytoplasm, there might be peribacillary bodies which, like similar bodies in human leprosy, were demonstrated to stain with Gomori's stain for acid phosphatase. These bodies preceded the development of the space, of which they were thought to be the cause by enzymic digestion. Neither the cytoplasmic components of the host cell nor the bacilli appeared to be damaged by the interaction with the other, in contrast with human leprosy in which bacilli degenerate and cells show foamy change. This latter phenomenon is associated with greater persistence of acid-phosphatase activity in human than in rat leprosy. [Abstract by D. S. Ridley, *Trop. Dis. Bull.* **62** (1965) 540.]

Kato, L. and Gozsy, B. Studies on the physiopathology of experimental murine leprosy; reticuloendothelial, capillary and mast cell response. A review. Rev. Canad. Biol. **23** (1964) 217-226.

The review is concerned mainly with the results of the authors' own researches during a period of 12 years. From experiments with surviving monocytes in experimental rat leprosy the authors conclude that there is a factor in well developed rat leprosy granuloma which is responsible for monopolization of macrophages by *Mycobacterium lepraemurium* and which permits rapid removal of the bacillus from the unfavorable extracellular environment; such histiocytes are inactive against carbon particles. Another set of experiments deals with the phagocytic activity of the capillary endothelium, which is brought about by the injury which results from a rat leprosy lesion—this they call "endothelial activation." In the early stages of the infection this, together with increased capillary permeability, is an important local defense mechanism; and capillary endothelium is not subject to monopolization by the bacilli. But in advanced infections endothelial activation breaks down—the authors think this may be the cause of dissemination of lesions. During the phase of active defense endothelial activation is mediated through mast cells, serotonin per-

haps being the agent. Rat leprosy is unique in that endothelial activation is maintained even in rats with depleted serotonin. Around developing lesions mast cells increase, reaching a peak in 40 days. Disruption of mast cells suddenly occurs at about 50 days. It is not certain, however, whether these mast cells favor the host or the formation of the granuloma. Antileprosy drugs retarded granuloma formation, increased endothelial activation, and raised the mast cell count. [Abstract by D. S. Ridley, *Trop. Dis. Bull.* **62** (1965) 540-541.]

Mollo, A., Pagnini, P. and Russo, M. La sulfonemie par l'administration intramusculaire des suspensions aqueuses au huileuse de diamino-4,4 diphénylsulfone. [Sulfonemia resulting from intramuscular administration of aqueous and oily suspensions of diamino 4,4 diphenylsulfone.] Acta Leprológica **62** (1965) 5-13.

Sulfone blood levels attained by intramuscular injection of oily suspensions into rabbits, rats, guinea-pigs, and dogs are lower than those obtained with water suspensions in the first 48 hours, but last longer. The blood levels attained by injecting water suspensions of the sulfone in gelatin do not differ in essence from those attained by injecting aqueous suspension of the sulfone in carboxymethylcellulose. Levels obtained by injection of chaulmoogra oil suspensions last longer than those obtained by injection of suspensions in arachis oil. From the 192nd to the 240th hour, however, according to the animal species, the sulfone blood levels obtained with aqueous and oily suspensions are minimal; e.g., at 192 hours the sulfonemia in the rat after injection of 0.125 gm./kgm. was 1.5γ/ml. when the sulfone was suspended in chaulmoogra oil, 1.2γ/ml. when it was suspended in gelatin, and 1γ/ml. when it was suspended in aqueous gelatin or carboxymethylcellulose solutions.—AUTHORS' SUMMARY

Coubert, J., Colomb, D., Ravault, P. and Mlle. M.-R. Battesti. Hémochromatose à aspect clinique de poikilodermie réticulée chez une hansénienne longtemps traitée par les sulfones et de protoxalate de fer. (Hemochromatosis with clinical picture of reticular poikiloderma in a patient with Hansen's disease long treated with sulfones and protoxalate of iron.) Bull. Soc. française Dermat. et Syphil. **72** (1965) 64-65.

Case report of patient from New Caledonia and discussion. In this case a hemochromatosis essentially cutaneous in localization coincided with lepromatous leprosy treated from 1947-1950 with chaulmoogra oil and thereafter for 14 years with sulfones (DDS 50 mgm. daily) and iron gluconate and vitamin B_{12}. Lepromatous leprosy may exhibit severe neurologic sequelae in spite of treatment even when DDS is used in low dosage. In this case, because of intolerance for sulfones, the iron gluconate and vitamin B_{12} were given in large doses. In the course of time extensive iron pigmentation occurred.—E. R. LONG

Yankah, J. A. K. Observation on the frequency of A.B.O. and Rh blood groups in leprosy and non-leprosy people in Ghana. Leprosy Rev. **36** (1965) 73-74.

The views of some leprosy workers with regard to hereditary factors in leprosy and the theory that contact alone is insufficient as an explanation for the manner of spread of leprosy are discussed. When blood groups and Rh factors were compared between a cross section of the community with leprosy and the normal population, no significant differences appeared. Tuberculoid leprosy was found to be significantly higher among Group O leprosy patients, and this difference needs further investigation.—[From Author's summary]

Amoretti, A. R. Nuevos conceptos en leprología. [New concepts in leprology.] Dermatologia (Mexico) **8** (1964) 235-241.

The hypothesis is advanced that *M. leprae*, a highly infectious agent of low pathogenicity, enters the lungs, the most vulnerable portal of entry. Prior to this primary infection the individual does not react in the Mitsuda test. After the infection, if the

body develops specific resistance, the reaction becomes positive. On the other hand, if the defense is only nonspecific the Mitsuda reaction remains negative. A high degree of infectiousness in persons with lepromatous leprosy, and the great susceptibility of the pulmonary portal of entry, favor spread of the disease. A person with lepromatous leprosy who moves in a crowd will infect many people who remain unaware of their infection. These are the Mitsuda-positive among apparently healthy people and the many patients with leprosy but no history of contact. Patients with open lepromatous leprosy should be segregated, because they endanger those exposed to their massive bacillary discharges.—[From Author's summary]

Keil, E. Zusammentreffen von Karzinom und Lepra. [Association of carcinoma and leprosy.] Krebsarzt **20** (1965) 269-274.

The author draws certain parallels between susceptibility to leprosy and susceptibility to cancer. In each case a relatively low reactivity of tissue toward irritants favors progression of the disease. In lepromatous leprosy tissue reactivity, as measured by the lepromin test, is low; in contrast, in the tuberculoid form, the test is positive and, correspondingly, tissue reactivity, as shown by an abundance of cellular and fibrotic response, is high. A somewhat similar situation prevails in cancer. Cancer cells are frequently found in blood and lymph vessels leading from a carcinomatous site. A great variation appears evident, however, in the capacity of such cells to set up metastases. This varying capacity cannot be correlated directly with low or high antibody responses, but there is some evidence connecting a lesser tendency to metastasis with a greater capacity for cellular reactivity. In the light of these facts it might be expected that carcinoma will develop more frequently in the lepromatous than in the tuberculoid form of leprosy. An actual survey of the reports of 17 authors in this respect disclosed carcinomatous development to be twice as frequent in lepromatous as in tuberculoid cases, and this in spite of the fact that a smaller number of lepromatous than tuberculoid patients live into the usual cancer age. A study by the author showed that the lepromin reaction was regularly negative in patients with advanced carcinomatosis. In certain fibrotic conditions, e.g., disseminated sclerosis, the incidence of development of cancer is relatively low. The author drew attention also to certain associations between cancer and leprosy, on the one hand, and pigmentation of the skin. Pigment atrophies, e.g., depigmented macular leprosy, are common in tuberculoid leprosy. The contrasting state, hyperpigmentation, has a relatively high association with the development of carcinoma.—E. R. Long

Suter, E. and Roulet, F. C. Staining *Mycobacterium leprae* in paraffin sections by the Gomori methenamine-silver method. Stain Technol. **40** (1965) 49-51.

Gomori's methenamine-silver method can be used successfully for staining *M. leprae* in paraffin sections even though these sections are obtained from 10-year-old blocks, in which the acid-fastness of the microorganisms no longer exists.—Authors' Abstract

Boisvert, H. *Mycobacterium xenopei* (Marks et Schwabacher 1965), mycobacterie scotochromogene, thermophile, dysgonique, eventuellement pathogene pour l'homme. [*Mycobacterium xenopei* (Marks and Schwabacher, 1965) a scotochromogenic, thermophile, dysgonic mycobacterium, possibly pathogenic for human beings.] Ann. Inst. Pasteur (Paris) **109** (1965) 447-453.

Since 1960, 24 strains of "scotochromogenic, thermophile, dysgonic" mycobacteria have been identified. They have been isolated from sputum or gastric tubage. For twelve of them, no data are given, or they are considered as contaminants; 10 are related with a pulmonary infection of tuberculosis type; 2 have been isolated from exeresis material, after they had been found in patients' sputum. These mycobacteria are similar to those isolated by Marks in England under the name *Mycobacteria xenopei*, and by Manten in Holland. These

mycobacteria are thin and long A.A.R. bacilli; they grow after a month at 37°C, more rapidly at 43°C; no growth at 22°C. The colonies are light yellow to orange yellow, and become pigmented in the dark. The strains are sensitive to ethionamide, cycloserine, kanamycin, most of them to viomycin and streptomycin. They are weakly resistant to isoniazid and resistant to PAS, Tb1, TCH, most often to pyrazinamide and ethambutol. Inoculation into guinea-pigs induces lymph node lesions. Rabbits do not seem susceptible. When inoculated into mice two strains provoke pulmonary granulations after four months. Out of 11 chickens inoculated intravenously with 9 strains (1 mgm.), 8 died before the third month; a pathologic study of two cases demonstrated an hepatosplenic miliary tuberculosis. The incidence of these "scotochromogenic, thermophile, dysgonic" mycobacteria is of the same order as that of *M. kansasii*.—AUTHOR'S SUMMARY

Basset, A. and Pradinaud, R. Étude comparée des réactions à la lépromine, au B.C.G.-test et à la marianine. [A comparative study of reactions to lepromin, BCG and marianum antigen.] Bull. et Mem. Facul. mixte Med. Pharm. Dakar **11** (1963) 210-214.

In this paper the authors report results of comparing the early and late skin reactions in a series of persons injected with lepromin, heat-killed BCG and heat-killed marianum bacillus. These persons, who were at Dakar, consisted of 197 patients with leprosy, 41 children of parents with leprosy, 31 children in hospital, of parents without leprosy, and 18 adults in hospital, not suffering from leprosy; not all subjects were tested with each antigen, and none of the children was tested with the marianum antigen. Positive tuberculin reactions were obtained in 13 of 27 patients with lepromatous leprosy, 5 of 15 patients with the tuberculoid type, and in 7 of 31 of the children without leprosy. Histologic examinations of the early reactions produced by BCG and the marianum antigen showed edema with polymorphonuclear infiltration and areas of necrosis, and similar examinations of the late reactions with each of the antigens showed lymphocytic infiltration with lymphocytes, epithelioid cells and giant cells with some areas of necrosis. From these results it would appear that only the Mitsuda reaction is consistently negative in the patients with lepromatous leprosy, for a high percentage of these patients reacted with the other antigens, and in the patients with the other forms of leprosy the reactions obtained with the 3 different antigens were not always parallel. The marianum antigen may cause intense reactions in patients with lepromatous leprosy. [Abstract by S. R. M. Bushby, *Trop. Dis. Bull.* **62** (1965) 536-537.]

Ross, Sr. H. Clinical biochemistry and immunology in leprosy—a review. Leprosy in India **36** (1964) 93-107; 193-211.

This very considerable review covers serum proteins, C-reactive protein, liver function, protein-bound iodine, electrolytes, blood changes in amyloidosis, some miscellaneous biochemical investigations in leprosy, and serologic reactions. Numerous illustrative findings are given, and some are set out in tables. [From abstract by D. S. Ridley, *Trop. Dis. Bull.* **62** (1965) 35.]

Banerjee, Mrs. Gouri and Roy, A. N. An electrophoretic study of leprosy serum and its possible relationship with haemagglutination titer. Leprosy Rev. **36** (1965) 41-42.

Hemagglutination reaction of sera of 32 bacteriologically positive and negative leprosy cases was studied and the protein fractions of their sera were investigated by paper electrophoresis. A decrease in albumin and an increase in globulin were demonstrated. Albumin-globulin ratio was less than one. A correlation between the increase in hemagglutination titer and globulin components of the serum proteins in leprosy cases was observed; these data have been statistically verified and found to be significant. —AUTHORS' SUMMARY

Cottenot, F. Appréciation quantitative sur le bacille de la lèpre murine d'anticorps

seriques décelables dans la lèpre humaine. [Quantitative measurement of serum antibodies for the bacillus of murine leprosy.] Acta Leprologica No. 20-21 (1965) 62-65.

When indirect immunofluorescence of the Stephansky bacillus was used as an *antigène figuré*, none of the leprosy sera tested proved negative and no healthy subject tested was positive. The abundance of serum antibodies thus traced seems particularly great for sera of lepromatous or borderline forms recently detected and with positive bacilloscopy for *M. leprae*. It clearly appears to diminish under the influence of effective treatment, and on the whole is more feeble in tuberculoid leprosy, and particularly so in the case of indeterminate leprosy treated in an early stage.—Author's Summary

Leiker, D. L. Zur Frage einer neuen Lepraendemie in Europa unter besonderer Berücksichtigung der Zusammenhänge zwischen Tuberkulose und Lepra. [The problem of a new leprosy endemic in Europe, particularly from the point of view of the relations between tuberculosis and leprosy.] Prax. Pneumol. **18** (1964) 816-824.

No serious danger exists of a new epidemic of leprosy in Europe in spite of the influx of repatriates from the tropics and regression of tuberculous impregnation. More than 250 victims of leprosy have come to live in the Low Countries in the last dozen years, the great majority scattered through the population. But very few new cases have been discovered, and those for the most part have been benign or doubtful. Such cases are susceptible to treatment under existing conditions. One cannot say that the contagion of leprosy might not be exceptionally increased, but between leprous infection and disease, the same difference exists as between tuberculous infection and disease. (From author's abstract, as adapted by N. Bourcart, Bull. Inst. Pasteur **63** (1965) 2087-2088.)

Montel, M. L. R. La lèpre d'importation en France. [Imported leprosy in France.] Bull. Soc. Path. exot. **57** (1964) 825-834.

The great mixing of populations due to two world wars, to the Indochina and Algeria wars, to various world conflicts, and to the increased rapidity of communications, has favored the contagion of leprosy. Black Africa, which is heavily contaminated (30/1000), and French colonies in the West Indies, are important sources of contagion, and for a long time sanitary precautions have not been observed. French physicians do not consider the statistics as reliable, but they observe that the number of imported cases increases in the civil population, particularly in the large sea and air ports. In the army the number of cases in 1963 was twice that of 1953. In France contagion is rare, but has sometimes been observed, viz., two autochthonous cases reported by Vissian in a focus on the Riviera, and various cases everywhere in France. They constitute a real danger, but this danger has been hitherto efficiently controlled by the present treatment (DDS, sultirène, and sanitary measures). —Author's Summary.

Vogelsang, T. M. Leprosy in Norway. Med. Hist. (London) **9** (1965). 29-35.

This is an interesting historical account of leprosy in Norway from the days of the Vikings to the present time. Reference is made to the work of Hansen. At the time of the first reliable census of persons suffering from leprosy, in 1856, a total of 2,858 was reported. The last patient to be registered was found in 1953 and there are now only 7 patients in the whole country. [Abstract by F. I. C. Apted, *Trop. Dis. Bull.* **62** (1965) 416.]

Saul, A. Descubrimiento de los casos de lepra. [Discovery of cases of leprosy.] Dermatología (Mexico) **9** (1965) 216-220.

The immediate objective in the campaign against leprosy is the discovery of cases in as early a stage as possible and their prompt treatment. Treatment of lepromatous cases with sulfones is an obvious

element in breaking the chain of transmission. Treatment of tuberculoid cases is less important. Actually it is the intermediate cases, in which more difficult problems of diagnosis are involved, which prove the most important in handling leprosy as an endemic disease. In practice the discovery of incipient T and L cases is of primary import, and several procedures have been proposed, which are applicable under different circumstances. Case finding, ensuring complete population coverage, is ideal, but, while justified in regions of high endemicity, is less frequently possible because of the paucity of personnel trained for the discovery of early cases. "Partial case finding" is more commonly practiced, and with good results. It is based on the concept that examination of patients for a variety of diseases by dermatologic centers and mobile units will uncover many cases. Since leprosy is a familial disease, examination of contacts of newly discovered cases is essential. Special emphasis is accorded to young persons. The follow-up system has advantages and disadvantages, the latter including the stigma likely to be built up, with consequent concealment of cases. The following table illustrates results for the period 1960-1964.

New cases discovered	7,110
By: Dermatologic consultation	56%
Examination of contacts	20%
Other means	24%

Classification of cases discovered in per cent:

	Total	*Dermatologic Center*	*Mobile Unit*
Lepromatous	43.8	23.0	20.8
Tuberculoid	24.7	11.7	13.0
Indeterminate	29.9	11.0	18.9
Dimorphous	1.6	1.0	0.6
Total	100.0	46.7	53.3

—E. R. LONG

Escobedo Valdes, E. Programa nacional para el control de las enfermedades crónicas de la piel. [National program for the control of chronic diseases of the skin.] Salud Publ. Mexico **6** (1964) 1013-1019.

This article contains tables and maps which show the incidence and distribution of leprosy in the Republic of Mexico, and particulars of the organization for the control of the disease, which affects mainly the west-central and northwestern states of the territory. Figures are given for the number of cases registered during each period of 4 years from 1930 to 1964. Between 1960 and 1964 the number of cases registered was 7,110 and the total number of existing cases, excluding patients who had died or had been cured, was 15,157. [Abstract by F. I. C. Apted, *Trop. Dis. Bull.* **62** (1965) 416.]

Sisirucá Q., C. and Convit, J. La epidemiología de la lepra en Venezuela. [The epidemiology of leprosy in Venezuela.] Rev. venezolana Sanid. y Asist. Social **29** (1964) 31-44.

———. Aspectos epidemiológicos de la endemia leprosa en la región andina de Venezuela. [Epidemiologic aspects of endemic leprosy in the Andean region of Venezuela.] *Ibid.* pp. 45-54.

——— **and Rasi, E.** Información epidemiológica sobre el foco leprogeno de la Colonia Tovar, Estado Aragua. [Epidemiologic data on the focus of leprosy in Colonia Tovar, State of Aragua.] *Ibid.* pp. 55-64.

1. Tables are given of the total number of patients with leprosy registered in Venezuela up to December 1962 (about 8,000 males and 4,500 females), and the clinical classification, which is 40.93% lepromatous, 4.59% dimorphous, 26.9% indeterminate and 27.58% tuberculoid. In the population of Venezuela (7,523,138) the number, up to 31 December 1962, of patients was 12,630, a prevalence of 1.678 per 1,000 inhabitants. The sex ratio is near equal, with a moderate predominance in males. The annual average number of patients is about 555 for all forms, with a percentage decline in number of about 25.

2. The Andean or mountainous system of Venezuela is of great interest. The people have abundant nutrition but their diet is not always well balanced. Leprosy surveys, and leprosy control, have been well

done. Up to December 1963 the total number of registered patients was 5,047 males and 2,787 females, and the percentage decline in the number of patients each year is 26.8.

3. The third paper is devoted to Colonia Tovar. There has been a striking diminution in the incidence of leprosy in Colonia Tovar compared with the general incidence in the geographic region of the Tovar municipality. The present situation in Colonia Tovar provides evidence of the favorable change brought about by BCG vaccination. The region was the site last century of a colony of German immigrants, and later of another group of similar immigrants. [From abstract by J. R. Innes, *Trop. Dis. Bull.* **62** (1965) 529-530.]

Griffiths, P. G. Leprosy in the Luapula Valley, Zambia: history, beliefs, prevalence and control. Leprosy Rev. **36** (1965). 59-67.

A small but intensive campaign against leprosy in an area of high prevalence, carried out for ten years, is described. To serve a population of 51,000 (of whom 21,000 were adults), there was one "parent" Leprosy Settlement, and there were 13 outpatient treatment centers. Seven of the latter were manned by dressers who regularly visited the villages in their area, as well as carrying out routine outpatient treatment. A steady decrease in new incidence of leprosy in the area annually, since the beginning of the campaign (1954) was evident. Eighty-six per 1,000 of the adult population were treated for leprosy between 1953 and 1963. Annual incidence rates for the years 1962 and 1963 were only about 3 per 1,000 adults. Traditional beliefs in the area are described, and what little can be traced about the history of leprosy in Zambia is set forth. [From author's summary]

Chowdhury, A. D., Sen, P. K., Chanda, A. M. and Adhikary, S. S. An epidemiological survey of leprosy in a rural area of West Bengal. Leprosy in India **37** (1965) 63-73.

The second area selected is typical of rural West Bengal, where the prevalence of leprosy is fairly high. A definitely higher prevalence of the disease was found among the males than the females, and similarly distribution of cases was more among the males than the females, giving a sex ratio of 2:1.25 (M:F). The prevalence of the disease and distribution of cases among the children have been found to be definitely lower than among the adult population. The low proportion of lepromatous cases, together with the low proportion of cases in children, may lead one to think that the chance of spread of the disease is not great. But this may not be correct, as the period of observation is short. Deformities were found in only 23.44% of leprosy cases. Only 11.82% of deaths were reported as due to leprosy *per se*. The Bauris (a Schedule Caste) in the area were maximum sufferers from the disease. Prevalence was definitely higher among the illiterate families and low income groups, mostly laborers of insanitary habits living in overcongested Kutcha houses. The average number of contacts per case in the area was 6.34. One point sixty per cent of healthy contacts of original cases developed leprosy during the period of follow-up (1955-1963). The attack rate in the contacts of lepromatous cases was 4 times greater than among those of nonlepromatous cases. The majority of cases developed the disease within 3 years of exposure to a source of infection.—AUTHORS' SUMMARY

Noussitou, F. M. School surveys in leprosy control campaigns. Acta Leprologica No. 20-21 (1965) 47-61.

The author (WHO leprologist for Burma) describes methodologic school surveys carried out in Burma in 1961-1962 as part of the regular leprosy control project activities. Among 350,798 students examined, 9,375 cases of leprosy (26.7/1,000) were discovered. The prevalence among school children was 23/1,000 in the 5-9 years age group, 28/1,000 in the 10-14 year group, and 21/1,000 in the 15-19 year group. The general prevalence was 29/1,000 among male students and 18/1,000 among females.

Clinically 65% of all cases were classified as indeterminate, 32% as tuberculoid, and 2% as lepromatous. [From author's summary]

Blanc, M. La lutte contre la lèpre en Indonésie. [The campaign against leprosy in Indonesia.] Acta Leprologica No. 20-21 (1965) 8-46.

The author reviews the evolution and results of a campaign against leprosy in Indonesia from 1956 to the end of 1962. Before this period no organized plan, and no program for case detection and treatment, existed. Isolation was practiced, in a leprosarium, or at home, for a very small proportion of 22,000 leprous patients known in 1954. When treatment was given it was with chaulmoogra oil. In the early years of the 1956-1962 study pilot experiments proved that mobile teams of specialized personnel were ineffective, but that detection of foci of infection and combined detection of leprosy and yaws were successful. The pilot studies also led to improved procedures of record keeping. The methods developed have been extended to eight provinces. Between 1956 and the end of 1962 approximately four million persons were examined and more than 11,000 cases of leprosy were identified. Sulfone treatment was introduced for known cases. On the basis of the results a national plan has been formulated. Results in Java and Bali show that an extension of the campaign is possible and that a considerable decrease in endemic leprosy is to be anticipated. [From author's summary]

Gluckman, L. Leprosy in New Zealand before the 20th century. New Zealand Med. J. **61** (1962) 404-409.

The author has made a study of records of leprosy or leprosy-like disease in New Zealand (1) in the pre-European period (i.e., before 1850) and (2) in the period subsequent to 1850, when cultural influences in New Zealand were modified substantially by missionaries and settlers. These studies have led him to conclude that good evidence exists for the presence of leprosy in New Zealand in the so-called Maori-Pakeha period (prior to 1850), in which the main cultural influences were totally or predominantly Maori. Numerous synonyms have long been in use in New Zealand for a disease with many features of leprosy as known today. Gluckman cites at length an account published by Arthur Thomson, a military surgeon, in 1854, which he believes comes close to establishing the existence of leprosy in New Zealand in the pre-European period ("An account of the disease called ngerengere by the New Zealanders (lepra gangraenosa), published in 1854 in the British and Foreign Medical-Chirurgical Review"). Gluckman made special note of Thomson's comparison of ngerengere with a disease described by John Hunter in his clinical descriptions in 1788 of diseases in the army in Jamaica. Among the Maoris the disease was attributed to divine punishment for moral transgressions. Thomson believed it to be induced by the use of poor food, lack of personal cleanliness, and indolence of body and mind. Other early authors cited by Gluckman believed the disease was introduced by canoe from Polynesia.—E. R. Long

Jopling, W. H. Leprosy: Past, present and future. J. Trop. Med. & Hyg. **68** (1965) 129-133.

Leprosy has aroused many and varied emotions throughout centuries, and the concept of the disease as a punishment for sin has strongly influenced social reaction to the actual disease. The current pattern of fear and revulsion has existed in many parts of the world independently of any Biblical influence. Jopling reviews some of the more important ancient medical treatises on the disease, and discusses the history of its spread in the old and new worlds. Its introduction in the new world is attributed to European explorers and settlers and not necessarily through the slave trade. Early harsh measures, once widely prevalent, were at a relatively late period replaced by what Jopling calls the era of compassion and segregation. This in turn was followed by an era of case-finding

and domiciliary treatment. The latter, in Jopling's view, represents policy that should be adopted by health authorities in countries were leprosy is endemic. He cites a statement by Latapí that leprosy "will disappear when the economic and cultural factors change, because leprosy is the thermometer of civilization."—E. R. LONG

Saul, A. La lepra y la literatura. (Leprosy and literature.) Dermatología (Mexico) 8 (1964) 162-165.

Leprosy, one of the most ancient diseases of mankind, has been the subject of innumerable legends, superstitions, novels and pictures. In almost all accounts the negative side of the story has been presented, the supposed contagiousness and incurability, the need for isolation, and the ultimate destruction of the individual, concepts frequently erroneous. At the same time, however, the disease has also inspired compassion, and a leprophilia as well as leprophobia. The motion picture film Ben Hur is cited as an instance of this divided outlook on leprosy. Modern advances in the treatment and care of leprosy are now tending to remove the former horror and fear, and promoting the concept of leprosy as a curable or preventable disease, of a much less contagious character than was once supposed. The recent novel "Un caso acobado" (A Burnt-out Case) by Graham Greene, a story of a fictitious leprosarium in a remote corner of Africa, in which full knowledge of the modern trend, including DDS treatment and rehabilitation procedures, is apparent, is mentioned as an illustration of the present trend, even though the destructive aspects of leprosy are still strongly emphasized. Other modern works also are cited. Saul calls attention to the change that took place in society's attitude toward tuberculosis and in that connection he quotes the well known remark of Latapí that leprosy needs what tuberculosis acquired through story and opera in its "lady of the camelias." (*Editor's note:* see also "A Few True Friends" by John Reddy, carried as a "Drama in Real Life," by the *Readers Digest* 1966 (January) 128-132)—E. R. LONG

Vedabodakam, R. Leprosy education in the villages. Leprosy Rev. 36 (1965) 87-90.

An educational program in villages in India, based on clinic talks, presentation of propaganda and lectures, is described. Village meetings alone will not root out every case of leprosy. This can result in course of time only from the work of a full scale leprosy control scheme. But modest and improvised effort is yielding useful results in the form of increasing numbers of patients coming forward for treatment, and also in a more liberal attitude on the part of village communities to their own patients. A modest propaganda program might with advantage be considered by small hospitals wishing to take up antileprosy work, as an interim method of reaching leprosy in the villages, until a full scale epidemiology program can be started. [From author's summary]

Tran-Van-Bang and Nguyen-Huan-Trong. Le lépreux est un malade mental. [Leprosy is a mental disease.] Bull. Soc. Path. exot. 57 (1964) 1200-1214.

A study of the psychology of leprosy patients shows that mental help is valuable for these patients, particularly because of the inferiority complex that often develops, which is due to neighborhood aversion. Fear of pathologic progeny, and difficulty in marrying, induce a sense of moral and sexual frustration. Suicides are relatively frequent among victims of leprosy in Vietnam. Life in leprosaria results in an asylum mentality, which induces laziness and lack of discipline. A sanitary education and work legislation might improve these mental pathologic conditions. — AUTHORS' SUMMARY

Binford, C. H. Leprosy today. Med. Ann. District of Columbia 34 (1965) 475-476.

In 1964, 103 cases of leprosy were reported to health departments in the United States, of which 39 were from the state of Texas. In September 1964, 68 cases were under official observation in New York City. The U.S. Public Health Service Hospital at Carville, Louisiana, has approxi-

mately 330 patients under treatment. During the past 15 years approximately 20 cases have been observed in the Washington, D. C. area. International travel has brought leprosy to the attention of practicing physicians who formerly considered it an exotic disease of no importance in their daily work. As a result, patients with advanced leprosy have been treated from time to time on an empirical basis without consideration of leprosy as among the diagnostic possibilities. The major road block in control is lack of any test to detect leprosy in its earliest stages. When eventually diagnosed the disease commonly has become so advanced that irreparable nerve damage and its consequences have occurred. The history of the U.S. Public Health Service's provision for control of leprosy, including the establishment of hospital and treatment facilities in Hawaii and Carville, Louisiana, and the award of research grants from the National Institutes of Health for investigation of leprosy, is reviewed. Prominent among the research grants have been awards to the Leonard Wood Memorial (American Leprosy Foundation). Direct research on leprosy is carried out at the Clinical Center of the U.S. Public Health Center in Bethesda, Maryland by staff members of the National Institute of Allergy and Infectious Diseases of the Public Health Service.—E. R. LONG

Jagadisan, T. N. Mahatma Gandhi answers the challenge of leprosy. Pamphlet, privately printed. Madras, India, Diocesan Press, 1965, pp. 30.

The author has set forth in this pamphlet a number of selections from his collection and recollections of Gandhi's answers to the challenges of leprosy. Gandhi did "yeoman service in focussing the nation's attention on the problem of leprosy" (from foreword by Sushila Nayar). Gandhi's interest in leprosy began during his residence in South Africa and never abated. He was continuously active in antileprosy movements and widely acquainted with leaders in the campaign against the disease. "To Gandhi leprosy had an intensely spiritual appeal . . . no less than a summons to humanize human life and civilize civilized life. The service to the leprosy patient can . . . lift the whole quality of human life." In Gandhi's words, "If you can transform the life of a patient or change his values of life, you can change the village and the country."—E. R. LONG

Gandhi Memorial Leprosy Foundation, Wardha. Report for the year 1964. Published by R. V. Wardekar, Director, November 1965. Wardha, India, pp. 44.

The Gandhi Memorial Leprosy Foundation came into existence in 1961 as the leprosy wing of the Gandhi Smarak Nidhi. In 1962 it was registered as an autonomous institution. The report here abstracted is devoted principally to activities during 1964, but gives a brief account of work carried on through 1963, together with audited accounts for the Foundation for 1963,, and a list of different centers of the Foundation, which are presented in separate appendices. The progress of work in 1964 is presented under the following headings: (1) control units, (2) training centers, (3) urban work, (4) referral center, (5) chemoprophylaxis project, (6) job study, (7) education, (8) association with other activities, (9) camp for social workers, (10) film on leprosy, (11) bulletin, and (12) construction work. The new cases detected by the 9 control units numbered 295, and were predominantly (285/10) nonlepromatous. The total number of cases registered for treatment at the end of 1964 was 4,174; 1,240 cases were listed as not registered for treatment. Of the 4,174 registered cases 2,372 were listed as "disease arrested" or "cured." The cured cases were predominantly nonlepromatous. The training centers trained 50 medical officers, 17 paramedical officers, 483 paramedical workers and 22 sanitary inspectors (a total of 572). Eleven units were included in the Foundation's urban experiment in health education. In the chemoprophylaxis project a start was made, in February 1964, in distribution of drugs (DDS or placebo) to nearly 22,000 healthy persons. A large organization is in the course of development for maintenance of this project, which op-

ened 11 clinics in January 1964 in 8 sectors, with 711 leprosy patients (107 lepromatous and 604 nonlepromatous) under observation and treatment. Twenty-one industries were covered by the end of the year with respect to the job study project.—E. R. LONG

BOOK REVIEW

Leprosy. Medical Bulletin MB-10, Department of Medicine and Surgery, Veterans Administration, Washington, D.C., May 25, 1965. Pp. 44.

The Department of Medicine and Surgery of the U.S. Veterans Administration issues comprehensive bulletins from time to time on specific diseases for the guidance of its medical officers. Many of these are revisions of previous bulletins, providing up-to-date information in each field. The current *Bulletin* on leprosy, prepared by Ricardo S. Guinto and Chapman H. Binford, Epidemiologist and Medical Director, respectively, of the Leonard Wood Memorial, and edited by Miss Delta Derrom, Assistant to the Medical Director, is a 44-page revision of an extended *Bulletin* treating all aspects of leprosy, prepared originally by the late James A. Doull, former Medical Director of the Memorial, and published in March 1954. The revision takes advantage of the numerous interim advances in the understanding and treatment of leprosy. Chapters include treatises on the distribution, etiology, pathology, classification, clinical features, diagnosis, treatment, prognosis and control of leprosy. A bibliography of 86 references is appended. The authors express appreciation to several colleagues and associates, including M. F. Lechat and S. C. Chang, who prepared special sections of the *Bulletin* or assisted in other ways.

The *Bulletin* represents a condensation of accepted knowledge on leprosy and serves as a ready source of information on all aspects of the disease for nonspecialists who see leprosy patients infrequently. A section of particular interest for the principal audience for the *Bulletin*, viz., physicians in the Veterans Administration and the U.S. military and public health services, has to do with leprosy in 90 veterans of the U.S. Armed Forces who served in 1940 or later. In the majority of these there was reason to suspect acquisition of the disease prior to military service. In 35, however, the disease was apparently acquired during military operations, chiefly in the Orient and Pacific Islands. Condensed histories of these 35 cases are given.

The *Bulletin* furnishes a practical guide for chemotherapy in leprosy, as well as a rounded picture of the natural history of the disease. Information on the availability of the *Bulletin* may be obtained from the Department of Medicine and Surgery, U.S. Veterans Administration, Washington, D.C. 20420 or Leonard Wood Memorial, 1200 18th Street, N.W., Washington, D. C. 20036. —E. R. LONG