

## 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.*

Prasad, K. V. N. and Mohamed Ali, P. Incubation period of leprosy. *Indian J. Med. Res.* **55** (1967) 29-42.

Data collected on multiple case families during a general leprosy survey in the Chingleput District of Madras State were used in estimation of the incubation period of leprosy. Although no clear-cut significant results were obtained in all cases, a consistent difference was observed in the incubation period of the two sexes; it was less in females. There is an association between age and age at onset of the disease in an individual and the incubation period is longer in adults than in children. In all categories considered it is longer with a lepromatous type index case than with a nonlepromatous index case. Although there is no significant difference between estimates of the incubation periods among the corresponding categories of secondary cases in two types of index case, a difference is observed in the two types, which is difficult to explain on the basis of available data. The incubation period is longest in the case of adults with lepromatous leprosy as the index case, viz., 85.3 months, and shortest in the case of female children with nonlepromatous leprosy as the index case, viz., 29.6 months.—[From authors' summary]

Jonquières, E. D. L. La biopsia troncular en el diagnóstico de la lepra neural pura. [Truncular biopsy in the diagnosis of pure neural leprosy.] *Leprológia* **10** (1965) 119-125.

Twenty patients believed to be affected by pure neural leprosy were submitted to truncular biopsy. To prove that this operation is easy and innocuous it was performed by the author without special instruments other than those of simple minor surgery. In 18 cases leprosy was confirmed,

the results being coincident with those of the Mitsuda reaction. Four patients were lepromatous, 6 were indeterminate and 8 were tuberculoid. One case with neural tenderness and thickening showed a histologically normal nerve. In another case a diagnosis of interstitial hypertrophic neuritis of Dejerine-Sottas type was made. Thirteen patients were followed up with dynamometry of the affected hand for periods from 3 months to 7 years after the biopsy. Twelve showed an increase in power after being treated with sulfones, corticosteroids and thiamine. One was unimproved. Truncular biopsy is recommended as a routine practice in the diagnosis of pure neural leprosy. Surgical trauma did not increase the leprotic neural damage in the patients of this series.—AUTHOR'S SUMMARY

Klingmüller, G., Doepfmer, R. and Seipp, W. Die Diagnose der Lepra. [Diagnosis of leprosy.] *Deutsches Ärzteblatt-Ärztliche Mitteilungen* **39** (1966) 2241-2248.

Review, with color illustrations of characteristic features of different types of leprosy, and extended tabulation of essential elements in differential diagnosis. Original must be consulted for details.—E. R. LONG

Kwitken, J. and Peck, S. M. Borderline leprosy. Case report of a patient with erythema nodosum and hepatic lepromas. *Arch. Dermat.* **95** (1967) 50-56.

*Case report.* As a result of immigration the number of cases of leprosy in New York City is increasing. The case is described of a 51 year old Puerto Rican woman who entered a hospital because of painful swelling of her hands and legs, which became worse when she was treated with drugs for hypertension and asthma. Further study identified the skin swellings as manifesta-

tions of ENL in a case of borderline leprosy. The patient left Puerto Rico 18 years ago, and has had no known contact with leprosy since then. In Puerto Rico she had been in contact with a brother who had been institutionalized for leprosy for 19 years. Skin scrapings were positive for *M. leprae*. Hepatic lepromas were found on liver biopsy, in one of which *M. leprae* were identified. Medical treatment has been complicated because of the coexistence of several serious diseases. ENL occurred sporadically in the course of medication for these. For the leprosy the patient has received DDS, acetosulfone, and sulfone therapy with corticosteroids as needed. Skin lesions have faded irregularly. The coexistence of asthma has made corticosteroid withdrawal difficult.—E. R. LONG

**Consigli, C. A.** Lepra dimorpha. [Dimorphous leprosy.] *Rev. Leprol. (Fontilles)* 6 (1966) 491-502.

Review of the history, clinical evolution, bacteriology, immunology and other features of leprosy, with citation of cases and provision of pertinent photographs of patients and photomicrographs of lesions, collected by the author. Included in the group classified are cases presenting a combination of infiltrative tuberculoid and lepromatous lesions, sometimes evident in a single section or in two biopsies made simultaneously. Besides those that present these infiltrative lesions in successive form, at different periods of evolution, there are instances with histologic textures of apparent tuberculoid or lepromatous appearance, but with modifications of a character preventing classification as typical.—F. CONTRERAS

**Zhuraleva, G. F.** [Neurologic lesions in regressive stages of lepromatous type leprosy.] *Vestn. Dermat. i Venereol.* 39 (1965) 68-71.

In the regressive stage of lepromatous leprosy there are no complaints of paresthesia and neurotic pains in the extremities. The "phenomenon of ignition" occurs and there is edema in tests with nicotinic acid, increase of erythema of leprous spots,

particularly on their edges in the same test, and in most patients thickening of the nerve stems. At the same time vasomotor and pilomotor changes occur in hypopigmented areas of the skin and partially on the apparently normal skin. Paresthesias of the cubital and minor femoral nerves persist, but do not progress.—N. TORSUEV

**Garus, V. I.** [Aggravation of the leprosy process in organs of sight and modern antileprosy therapy.] *Vop. Leprol. i Dermat.* 4 (1967) 161-172.

Definite and characteristic regularities in aggravation of the leprosy process in eyes were established by observations on 500 leprosy patients from 1952-1964, i.e., in the modern period of antileprosy remedies. [From author's summary.]

**Odiriz, A., Reys, O. and Convit, J.** Miositis lepromatosa. [Lepromatous myositis.] *Dermat. venezolana* 5 (1965-1966) 50-55.

Case report of lepromatous leprosy in an adult male with reactional lesions who had received no specific treatment. There was infiltration of the muscles of the arms and legs. Biopsies from these revealed lepromatous granulomas in the muscular interstices, and degeneration of the muscle fibers with degenerated acid-fast bacilli. The literature on such cases is reviewed.—[From author's summary]

**Floch, H. A., Duchassin, M. and Sivadjian, J.** Troubles de la sudation dans la lèpre et hygrophotographie. [Sweating disturbance in leprosy and hygrophotography.] *Bull. Soc. Path. exot.* 58 (1965) 982-987.

The technic of hygrophotography (based on the production of images on a sensitive surface as a result of the action successively of light and humidity) permits study of the physiology and pathology of sweating. In patients with lepromatous leprosy it demonstrates sweat secretion in leprous infiltrations and in the healthy regions between these infiltrations. In nondifferentiated or tuberculoid forms of leprosy, sweating disturbances are located chiefly in chemically visible macules.—[From author's summary]

Fan, J., Chang, H. and Ma, B. Alopecia mucinosa simulating leprosy. *Arch. Dermat.* **95** (1967) 354-356.

Differentiation of alopecia mucinosa from leprosy is important in the endemic areas of leprosy where the diagnosis of leprosy is often made clinically rather than by pathologic or bacteriologic examinations. The present paper reports two cases of alopecia mucinosa mistaken for leprosy, in which one patient had been confined in a leprosarium for two years before he was proved nonleprotic. In order to avoid this kind of mistake, recognition of alopecia mucinosa by the medical profession in the areas is particularly important. Unawareness and subsequent failure to give the correct diagnosis may result in seriously stigmatizing the patient.—AUTHORS' ABSTRACT

Browne, S. G. The drug treatment of leprosy. *Trans. Roy. Soc. Trop. Med. & Hyg.* **61** (1967) 265-271.

General review, with principal consideration of treatment problems and regimens, with emphasis on DDS, and briefer reference to other drugs used in the therapy of leprosy. The final sections of the paper deal with "arrest" of leprosy lesions, follow-up examinations and practical rules to observe in the prevention of leprosy.—E. R. LONG

Gatti, J. C., Cardama, J. E., Fariña, M. H., Balaña, L. M., Wilkinson, F. F., Bianchi, O. J. and Avila, J. J. Primeros ensayos de tratamiento de lepromatosos con asociación de medicamentos. [First trials in the treatment of lepromatous patients with an association of drugs.] *Leprológia* **10** (1965) 179-183.

Eleven lepromatous patients were submitted to a comparative trial of sulfones alone and a combination of sulfamethoxy-pyridazine plus sulfone, and another one of sulfadimethoxine (Madribon) plus sulfone. A first group of 4 patients took SLS 8,871 (sulfamethoxy-pyridazine plus sulfone), a second group of 4 patients took SLS 8872 (sulfadimethoxine plus sulfone), and a third group of 3 patients took SLS 8874 (sulfone alone). The trial was of the dou-

ble blind type. The doses were: sulfamethoxy-pyridazine 0.25 gm., plus 25 mgm. of DDS daily for group one, and sulfadimethoxine 0.25 gm. plus 25 mgm. DDS for the second group. The third group took only 25 mgm. daily of DDS. Six months of treatment proved insufficient to permit definite conclusions.—E. D. L. JONQUIÈRES

Sokolov, V. V. and Bogun, V. V. [On the effectiveness of treatment of leprosy by Etisul in combination with other anti-leprosy remedies.] *Vop. Leprol. i Dermat.* **4** (1967) 151-160.

Data are given on 25 patients with the lepromatous type of leprosy who were treated by Etisul in combination with other antileprosy drugs. Clinical and pathomorphologic data show that the most pronounced therapeutic effect is under treatment by Etisul in combination with DDS and CIBA-1906. Etisul is less effective when coupled with injections of 50% Solu-sulfon-solution. The authors consider the combination of Etisul with Etoxid (etoxicodone) unsuitable because of its weak effectiveness in leprosy. [From authors' summary]

Languillon, J., Giraudeau, P. and Plagnol, H. Traitement de la réaction lépreuse a type d'érythème noueux par 1 (hydroxy-2 ethyl)-1 methyl-2 nitro-5 imidazole (Metronidazole-Flagyl). [Treatment of lepra reaction of erythema nodosum type by 1 (hydroxy-2 ethyl)-1 methyl-2 nitro-5 imidazole (Metronidazole-Flagyl).] *Bull. Soc. Path. exot.* **59** (1966) 17-21.

Eighteen patients were treated by Metronidazole (chemical formula in title) in a dosage of nine 250 mgm. tablets a day for 6 days, and then decreasing doses for 8 days. In the cases studied the drug proved inferior to emetin. It should be used only for "relay" therapy at the end of antimony treatment or cortisone therapy. [From authors' summary]

Belda, W., Manzoli, S. and Jordy, C. F. A talidomida no controle da dor nas neurites lepróticas. [Thalidomide in the control of pain in leprosy neuritis.] *Hospital (Rio de Janeiro)* **70** (1966) 731-737.

The authors report the effect of thalidomide in the control of pain in 27 patients suffering from leprosy neuritis in Rio de Janeiro. They gave 100 mgm. of the drug orally twice a day for 5 days, then daily for a week and then on alternate days. There were mild side-effects in 3 patients. Pain was reduced and the results were excellent in 16 patients. The authors conclude that the drug is efficient in the control of pain in leprosy neuritis. [Abstract by J. R. Innes. *Trop. Dis. Bull.* **64** (1967) 380-381]

✓ **Contreras, F.** DDS en inyección retardada en el tratamiento de la lepra. [DDS in retarded injection in the treatment of leprosy.] *Acta Leprol.* **26** (1966) 14-21.

The most effective of the various drugs used in treating leprosy has proved to be DDS. Although it is usually not toxic, treatment causes reactions in some patients, necessitating a break in the continuity of medication. Among patients treated orally, best results have been obtained in those treated regularly for several years. Unfortunately numerous patients, for diverse reasons, will not submit to regular oral medication. For them, treatment by intramuscular repository sulfones, at longer intervals, is advised. Repository sulfone therapy (report based on Berek's LS 57) has produced far better results than those previously obtained by oral treatment. Excellent tolerance to the drug has been observed even in cases where the dose administered exceeded the dose recommended. Reactions have rarely been noted. For best results it is advisable to start parenteral treatment with 1 ml., repeated after a week, and increased by 0.5 ml. each week, up to 2.5 ml. After that, injections may be made every two weeks, the dosage being increased each time by 0.5 ml. to a maximum of 5 ml., which is then repeated each two weeks. [From author's summary.]

✓ **Carboni, E. A., Sigal, S. and Mussi, J.** Intoxicación accidental por sulfona madre en niño de dos años. [Accidental intoxication with DDS in a two-year old child.] *Leprológica* **10** (1965) 97-99.

A two-year old boy, son of a lepromatous mother, accidentally took nine 100 mgm.

DDS tablets in one intake. Obnubilation, cyanosis, cardiac erethism, tachycardia and palpebral edema developed. Mild anemia, albuminuria and some hematuria were noted. Treatment with oxygen, methylene blue and Urotropin (0.10 gm.) in cachets each 4 hours, with antibiotics, vitamins B and C, a hepatic protector, and sodium bicarbonate, made it possible to discharge the child in good health in 20 days.—E. D. L. JONQUIÈRES

✓ **Girling, J., Hameed, M. A., Selvapandian, A. J. and Fritschi, E. P.** Further advances in special footwear and moulded soles. *Leprosy Rev.* **38** (1967) 103-106.

"Until recently boots for badly deformed feet of leprosy patients have tended to be very clumsy, broad and heavy looking. In many cases this has been a deterrent to the patient to wear the shoes." Full details are given for the manufacture of shoes without these defects, and for these reference to the original paper is necessary. "This special type of footwear is expensive. So special care should be taken when prescribing such footwear that the patient is a suitable type. The best designed and made footwear is not sufficient alone to keep a patient free from ulcers. The patient himself must have a determination and incentive to be ulcer-free. These complicated and costly boots will not work when used for the deformed feet of beggars and other patients who lack the necessary incentive. But they will work very successfully on patients who have been truly rehabilitated and who realize the dangers and horrors of ulcers as well as the financial implications when an ulcer means loss of working hours. For the patient with deformed feet who is to be rehabilitated, a well planned and made boot is a necessary part of his rehabilitation."—N. D. FRASER

✓ **Goloshapov, N. M.** [Combination therapy of trophic sole ulcers with disease of bone tissue in leprosy patients.] *Vop. Leprol. i Dermat.* **4** (1967) 173-175.

For the treatment of trophic sole ulcers with bone tissue disease, it is necessary to carry out surgical procedures (resection, exarticulation, sequestrectomy) in combi-



nation with stimulators of reparative regeneration (methandrostenolone, methylandrosteniol, pentoxile, 4-methyluracil and other drugs.) It is also necessary to use special orthopedic footwear and to treat "preulcer" conditions (abrasions, scratches, hyperkeratosis, etc.) at the right time. [From author's summary.]

**Sobolev, P. S.** [The problem of treatment of trophic ulcers in leprosy patients.] Vop. Leprol. i Dermat. 4 (1967) 176-178.

After surgical treatment of ulcers intramuscular injections were made around the ulcers with solutions of vitamin and antibiotic complexes (penicillin and streptomycin). The ulcers were covered with vitamin and antibiotic powder, and then a modified gelatinous Unna-bandage was put on them. Of 13 patients with trophic ulcers 12 recovered, and the other achieved considerable improvement. Of 59 patients with trophic ulcers of various etiology, treated by this method, but without surgical therapy, 53 recovered completely and six improved notably. [From author's summary.]

**Contreras Rubio, F.** Histopatología de la lepra. [Histopathology of leprosy.] Rev. Leprol. (Fontilles) 6 (1966) 503-521.

The histopathology of leprosy considered as an inflammatory disease in which different types of lesions occur, depending on the defenses of the organism, is reviewed. The review covers the author's picture of the lesions of indeterminate and tuberculoid leprosy—the latter in its relatively benign and acute reactional forms—and the histopathologic features of lepromatous leprosy, lepra reactions, and dimorphous leprosy. The visceral lesions of the lepromatous form are described at length and the frequency of amyloidosis is noted. Interchanges in the form of the different types of leprosy are noted, and finally the author calls attention to difficulties in interpretation of the histopathology of leprosy, in which emphasis is laid on the cells concerned in the inflammatory reaction of leprosy, the changes these cells undergo, the lesions of connective tissue and nerves, and variations in the abundance of leprosy bacilli.—F. CONTRERAS

**Languillon, J., Plagnol, H., Saboret, J., Gayraud, J. and Giraudeau, P.** La foie des lépreux. [The liver in leprosy patients.] Bull. Soc. Path. exot. 59 (1966) 22-30.

Histopathologic examination of biopsy specimens and studies of liver function were carried out in 100 leprosy patients (78 lepromatous and 22 tuberculoid). Specific lesions were found in the biopsy specimens. In lepromatous disease leprosy bacilli were found in Kupffer cells and histiocytes in the portal fissures, leading to the formation of leprotic nodules, rich in bacilli, which caused infarction of the parenchyma without any elective location. In tuberculoid leprosy lymphocytes and histiocytic foci were observed in portal fissures. In cases of "cured" leprosy specific lesions persisted. In the liver leprosy appears to be a disease of the reticuloendothelial system, resulting from spread of *M. leprae* by the blood. [From authors' summary]

**Klingmüller, G.** Residualkörper bei lepromatöser Lepra. [Residual bodies in lepromatous leprosy.] Archiv. f. klin. u. exper. Dermat. 225 (1966) 149-162.

The opaque droplets of Nishiura in the Virchow lepra cell can be considered to be lysosomes. In reaction-free lepromatous leprosy the lysosomes remain, with degenerative elements, for a long time. Then lamellated, foliated structures appear, which are residual bodies of lysosomes. Apparently spiral, doubly contoured membrane systems are incorporated in such systems, which may be derived from endoplasmic reticulum. [From author's summary.]

**Torsuev, N. A.** [Methods of staining histologic preparations in their application to the practice of physician-leprologists.] Vop. Leprol. i Dermat. 4 (1967) 100-123.

The different methods of fixation of biopsied skin and the various methods of staining of histologic preparations are presented in this article in application to the practical needs for physicians dealing with leprosy. [From author's summary.]

**Ghosh, S.** Histochemical changes in the tissues of different types of leprosy lesions. *Indian J. Dermat.* **9** (1964) 1-10.

The introduction includes leprosy in ancient medical writings, the spread to Europe, and leprosy in the new world. Etiology in concepts from ancient days to the present time is discussed. The bacteriology of *M. leprae* is reviewed, including electron microscopy, culture *in vitro*, and experimental transmission.

———. *Ibid.* **9** (1964) 91-103.

The pathology of leprosy is discussed. Probable routes of infection, spread of the disease, and its evolution in human beings are clarified. The different types of histology found in leprosy are described, with a review of histochemical investigations. The object of the study was to throw light on the host-parasite relationship in leprosy, particularly the nature of the changes induced at the cellular level. Histochemical features observed in the polar types of leprosy may throw some light on their genesis. Histologic techniques to be followed are described.

———. *Ibid.* **10** (1964) 1-7.

Methods used for the detection of neutral fat, phospholipids, cholesterol and its esters, fatty acids, acidic lipids, etc., are described and interpreted.

———. *Ibid.* **10** (1965) 69-76.

Methods for the detection of different types of carbohydrates and enzymes are presented.

———. *Ibid.* **11** (1965) 11-16. See *Internat. J. Leprosy* **35** (1967) 99.

———. *Ibid.* **11** (1966) 51-57. See *Internat. J. Leprosy* **35** (1967) 99.

———. *Ibid.* **12** (1966) 20-32.

The paper consists of four parts: 1. Study of tuberculoid leprosy, 2. Cytochemical pattern of *M. leprae*, 3. The tissue mast cell in leprosy, 4. Synopsis. Neutral fat was found to be present in giant cells and mast cells; in the former the concentration was less and identical with the distribution of

PAS-positive material. Alkaline phosphatase was detected in the lymphocytes, fibroblasts, and epithelioid cells, in the nerve and in the cells of the granuloma, as in lepromatous lesions. Failure to detect the presence of lipids in the bacillus-free histiocytes and epithelioid cells of the tuberculoid lesion provided further support for the postulate that intracellular lipid of a lepra cell is related to the presence of bacilli. Cytochemical study of *M. leprae* revealed different kinds of lipids, including neutral fat, phospholipids, and fatty acids. The presence of RNA, DNA and "gamma" metachromasia, as reported by other workers, could not be confirmed. The morphology, distribution and acid-fast property of mast cells were similar to the properties of the "fuchsinophil cells" described by Khanolkar as histiocytic cells containing partly digested leprosy bacilli. The different microchemical substances in the mast cells were demonstrated with photographs. These cells were encountered in larger number in tuberculoid leprosy than in lepromatous leprosy. The possible reasons for other numerical variation in the two polar types and their role in the immunity mechanism are discussed.

———. *Ibid.* **12** (1967) 76-83.

References for the thesis cited above.  
—S. GHOSH

**Serial, A., Luna, M. B. and Olmedo de Grin, H.** Mastocitograma experimental con bacilos acido-alcohol-resistentes. Resumen. [Experimental mastocytogram with acid-alcohol-fast bacilli. Resume.] *Leprologia* **10** (1965) 93-94.

The authors injected *M. leprae* and BCG into the peritoneum of white rats in order to observe the behavior of mast cells, following the trials of Kato with guinea-pigs injected with *M. lepraemurium*. In a control group, not injected, some 51 mast cells were found in the peritoneum 30 minutes after the injection. In the groups injected with *M. leprae* and with BCG, after 30 minutes, 277 and 727 mast cells, respectively, were found. In other groups, killed between 3 and 5 days after the inoculation,

the mast cell count was lower than in the control group.—E. D. L. JONQUIÈRES

**Sushida, K., Hirano, N. and Nakano, H.** Placental infection in the fetus of pregnant murine leprosy mice. *La Lepro* **35** (1966) 237-246.

The authors have previously reported the presence of acid-fast bacilli (AFB) in young normal mice, and the occasional presence of AFB in the fetuses of pregnant mice. The bacilli were found in packet arrangement, and could not be cultivated. An experiment was performed on two caged groups of breeding mice: (a) murine leprosy females and normal males, and (b) murine leprosy males and normal females. Pregnant mice from each group were examined. In group A 41 females with murine leprosy became pregnant; AFB were found in 15 of their 77 fetuses. In group B 4 out of 19 normal females became pregnant, with a total of 22 fetuses; in no fetus of this group were AFB found. AFB were found in two of 13 normal males and in two of 12 normal females that had been caged with mice with murine leprosy. In one female of this group globi were found in the liver. [From authors' summary.]

**Bergel, M.** Transmisión experimental de la infección leprosa a animales de laboratorio. [Experimental transmission of leprosy infection to laboratory animals.] *Rev. lat.-amer. Microbiol. y Parasitol.* **8** (1966) 159-170.

*Review.* In *M. leprae* inoculations of experimental animals, the inoculum should be small, well purified and injected in a single place. Animals should be long-lived and used in large numbers. In order to check against the presence of other mycobacterial infections in the animals used it is essential that a group of corresponding normal, uninfected animals be maintained during the whole experimental period as controls. Three criteria are required for recognition of true infection, (a) quantitative evaluation by bacillus counts, (b) qualitative evaluation by histologic studies, and (c) biologic evaluation through culture, reinoculation, and immune reactions. [From author's summary.]

**Klingmüller, G. and Orfanos, C.** Der elektronen-mikroskopische Aufbau des Mycobacterium Leprae. [The electronmicroscopic structure of *Mycobacterium leprae*.] *Arch. f. klin. u. exper. Dermat.* **224** (1966) 373-384.

Japanese reports of electronmicroscope studies of leprosy were confirmed in a leproma from an untreated patient with lepromatous leprosy. *M. leprae* showed diverse boundary membranes folded into an intracytoplasmic membrane system. The cell wall appeared to be in close contact with the external cytoplasmic membrane. The bacterium was found to be enclosed by an electron-transparent zone (Nishiura), surrounded by a layer from the host cell. Inside was a granular cytoplasm, and nuclear material resembling threads or strings of pearls. Cross cuts of the bacterium ranged from round to oval. Division was transverse. In lepromatous leprosy at least 20% and at times as much as 95% of all the bacteria were in a degenerative state, with clumping and coagulation of the contents. [From authors' summary.]

**Akers, W. A. and Morse, W. C.** Demonstration of *Mycobacterium leprae* in tissue. Demonstration by means of Khanolkar's concentration test followed by fluorescent staining. *Arch. Dermat.* **94** (1966) 361-362.

*M. leprae* was demonstrated in human skin by fluorescent staining, after concentration by Khanolkar's technic, when it could not be demonstrated by the usual histologic methods. The patient had tuberculoid leprosy and his routine sections were consistently negative. After concentration bacilli could be found in smears stained by the Ziehl-Neelsen method, but much better results were obtained with auramine O and rhodamine D fluorescent staining. [Abstract by D. S. Ridley. *Trop. Dis Bull.* **64** (1967) 171]

**Browne, S. G.** The transient reappearance of morphologically normal *M. leprae* in patients under treatment. *Leprosy Rev.* **38** (1967) 83-86.

Morphologically normal *M. leprae* may

reappear transiently at any of the sites habitually examined by the slit-smear technic. The most common time for this to occur is during the second year of treatment. There are generally no antecedents, clinical or bacteriologic, to indicate that solid rods will reappear. There are usually no accompanying signs of acute exacerbation, and the total bacillary load is not as a rule greatly increased. The bacilli are not resistant to the drug given, and will disappear within a few months, as treatment is continued with the same drug. The reappearance is to be detected only by the regular and careful examination of skin smears.—AUTHOR'S SUMMARY

**Nagai, A., Miura, Y., Susuki, S. and Majima, S.** Detection of *M. leprae* in the skin lesions of so-called negative cases. Sensitization of concentration methods. *La Lepro* 35 (1966) 231-236. (In Japanese; English summary.)

One hundred and sixty-eight skin samples removed by trepanation from 58 patients negative for bacilli on 3 to 8 examinations during a period of a half year to 2 years were studied by direct smear after trituration and grinding, or by concentration by NaOH or chloroform. A number of lightly positive cases also were examined. The trepan-snip method proved slightly superior to the routine slit method. Rarely the opposite was true. Grinding specimens in a mortar had an unfavorable effect, because of masking of bacilli by debris and loss of acid-fastness from the grinding. The routine snip or scrape method appeared to be a fairly good procedure for finding *M. leprae*. Various changes in morphologic and staining qualities of the bacilli, including granulation, shortening and variation in color in stained specimens, were noted; their significance was not clear. Cleaning of instruments to remove adhering acid-fast organisms is essential. [From authors' abstract.]

**Bosq, F. J. P. and Sacheri, R. F.** Modificaciones sinusales y localización de los bacilos en los enfermos de Hansen con sinusitis paranasales. [Sinusal modifications and localization of *M. leprae* in

leprosy patients with paranasal sinusitis.] *Leprológia* 10 (1965) 100-102.

Some acid-fast bacilli were found in macrophages in the paranasal sinuses of patients with sinusitis, but no lepromatous granuloma was revealed in the sinus mucosa.—E. D. L. JONQUIÈRES

**Reid, I. S.** *Mycobacterium ulcerans* infection: A report of 13 cases at the Port Moresby General Hospital, Papua. *Med. J. Australia* 1 (1967) 427-431.

Thirteen cases of *M. ulcerans* infection in Papua are reported. Nine were located in an area around the Kamusi River. The disease has its highest incidence in children, does not spread to the lymph nodes, and does not affect the general health of the patient appreciably. Extensive necrosis occurred in the lesions in 2 cases. Treatment was by chemotherapy (dapsone and other drugs) and surgical excision, followed by skin grafting. A method of exposure to heat was found successful in controlling spread of the disease. Three of the patients were siblings. In 8 cases lesions were found on the limbs, in 3 on the trunk, and in 2 on the scalp. The incubation period was variable; in one case it was less than two weeks, while in others it appeared to be months. [From author's summary.]

**Cott, R. E., Carter, M. and Sall, T.** Cutaneous disease caused by atypical mycobacteria. Report of two chromogen infections and review of the subject. *Arch. Dermat.* 95 (1967) 259-268.

Mycobacterial infections of the skin of two patients are presented, one caused by group II scotochromogens and the other by *Mycobacterium marinum* (*balnei*). The scotochromogen infection is the second reported case of skin infection due to that organism. Both infections were contracted after injury in brackish or salt water. Mycobacteria produce pulmonary disease, adenitis, osteomyelitis, and skin infections. The causative organism may be identified by optimum growth temperature, pigment production, animal pathogenicity, and serologic studies. Some difficulties were encountered in identifying *M. marinum* (*balnei*).



The decision to use antimicrobial therapy, local therapy, or no treatment rests on knowledge of the organism and the clinical condition of the patient. Local therapy was used in one patient without success, and both were given antimicrobial therapy.—  
AUTHORS' SUMMARY.

**Torsuev, N. A.** [The pathogenic organism of rat leprosy—the Stephansky bacillus (*Mycobacterium lepraemurium*).] Vop. Leprol. i Dermat. 4 (20) (1967) 49-94.

On the basis of data in the literature and his personal observations the author gives a detailed exposition of the classification, morphology and tinctorial properties, filtered forms, toxins, biochemistry, metabolism and virulence of mycobacteria, and methods for their culture and preservation. Data on pseudoleprosy bacilli are presented in this article. [From author's summary.]

**Torsuev, N. A.** [Geography and statistics of rat leprosy.] Vop. Leprol. i Dermat. 4 (20) (1967) 43-48.

The author lists data presented by various authors on the geographical distribution of disease caused by the Stephansky bacillus and on the frequency of different kinds of rat disease under natural conditions in various countries, with reference to sex and age. [From author's summary.]

**Tukui, T., Mori, T., Kohsaka, K., Nishimura, S. and Yoneda, M.** Antigenic structure of *Mycobacterium lepraemurium*. I. Presence of avian type  $\alpha$  antigen in strains of *M. lepraemurium*. Biken J. (Osaka) 9 (1966) 63-75.

The  $\alpha$  and  $\beta$  antigens, which are major extracellular protein products of *M. tuberculosis*, have been shown to play a significant role in the serologic typing of mycobacteria. The authors describe the distribution pattern of these antigens in 8 strains of *M. lepraemurium* and the results of comparative analysis of their cross-reacting materials with the  $\alpha$  antigens of avian and P8 types in the double diffusion method of Ouchterlony. The mycobacteria were obtained from lepromas of mice, which, after

lyophilization, were ground with quartz powder for several minutes in the cold. The resulting material was mixed with an equal volume of phosphate buffer at pH7 containing 0.25 M sucrose and centrifuged at 12,000 g for 20 minutes. The supernatant fluid was again centrifuged at 105,000 g for 90 minutes and the clear supernatant after dialyzation overnight was lyophilized. Purified  $\alpha$  and  $\beta$  antigens were obtained by the methods of Yoneda *et al.*, and were usually used at 30  $\mu$ gm. protein per ml. in phosphate buffer in the diffusion analyses. The avian and P8 antigens were obtained from concentrated unheated culture filtrates, the antigens being isolated and purified by a combination of ammonium sulfate fractionation, zone-electrophoresis and DEAE-cellulose column chromatography. The antisera were prepared in rabbits. The results of the analysis show that the antigens of each of the 8 strains of *M. lepraemurium* reacted with the anti- $\alpha$  serum to form single precipitation lines which fused with clear spur formation with the single line formed between the  $\alpha$  antigen and its specific antiserum. On the other hand no precipitation lines could be detected between these antigens and the anti- $\beta$  serum. These results indicate the absence of a common antigen to  $\beta$  but show that there is a cross-reacting material with antigenic determinants partially in common with those of  $\alpha$  antigen in all the antigens tested. For convenience this cross-reacting material found in these strains was designated as lepraemurium- $\alpha$ . Cross-reaction also occurred with the P8- $\alpha$  serum, but with spur formation, and with the avian- $\alpha$  serum, but without spur formation; lepraemurium- $\alpha$  is thus indistinguishable by this test from avian- $\alpha$  antigen. Yoneda *et al.* (*loc. cit.*) divided the mycobacteria into 4 classes depending on the presence or absence of the  $\alpha$  and  $\beta$  antigens, and from the results of these tests, it seems reasonable to place *M. lepraemurium* in a third group to which several other species, e.g. *M. kansasii* and *M. avium* belong. [Abstract by S. R. M. Bushby. *Trop. Dis. Bull.* 64 (1967) 381-382]

**Wilkinson, F. F., Gago, J. G. and Santabaya, E.** Relación entre el *Bacillus prop-*

*termariam* y el *Mycobacterium leprae*. Resultados bacteriológicos, inmunológicos e histopatológicos. [Relation between the *Bacillus proptertermariam* and *M. leprae*. Bacteriologic, immunologic and histopathologic results.] *Leprológia* 10 (1965) 103-109.

In a first report the authors describe the finding of bacillary acid-fast forms obtained from a culture of *Bacillus proptertermariam* after repetition of subcultures in a period of one year and ten months. They noted the characteristics of the patient from whom the strain of *Bacillus proptertermariam* had been taken. They made bacteriologic, immunologic and histopathologic tests in order to identify these acid-fast forms with *M. leprae*. Up to now the bacteriologic results, as well as partially completed immunologic tests, indicate that the acid-fast bacilli found in subcultures of *Bacillus proptertermariam* behave very much like *M. leprae*.—E. D. L. JONQUIÈRES

**Hart, P. D'A.** Efficacy and applicability of mass B.C.G. vaccination in tuberculosis control. *British Med. J.* 1 (1967) 587-592.

Critical review. The area of doubt as to whether BCG could protect substantially against tuberculosis in man has shifted to whether BCG vaccination can be effective in communities where there is much low-grade tuberculin sensitivity and probably atypical mycobacterial infection. In such situations there is the possibility that the full efficacy of vaccination will be experienced only by those free of all mycobacterial infection, whereas nonspecific infection may confer some degree of natural immunity, with limited additional protection provided by superimposed BCG. The crucial question is the degree of this limitation. It is reasonable on the basis of present information to accept that BCG vaccination will have a moderate efficacy in the developing countries, and that where there is a high tuberculosis risk a mass vaccination policy will make a worthwhile reduction in morbidity in the community. The applicability will be further enhanced if strategy can be arranged so as to give a first vaccination early in life before tuberculous or even nonspecific mycobacterial infection

has had a chance to become frequent. We have in BCG vaccination an example of the difficulties in taking knowledge developed in the technically advanced countries and transferring it to the less advanced, when it is to be applied there on a mass scale.—[From author's conclusions.]

**Hart, P. D'A. and Rees, R. J. W.** Lepromin and Kveim antigen reactivity in man, and their relation to tuberculin reactivity. *British Med. Bull.* 23 (1967) 80-85.

The authors note that delayed hypersensitivity of the classic tuberculin type occurs readily in man as a result of sensitization to a wide range of bacterial and viral antigens in chronic and acute infective diseases, and as a result of sensitization to drugs and other chemicals. Such hypersensitivity may play an important role in the pathogenesis of these infections or diseases, and the associated delayed-type skin test can be used for diagnostic purposes. The lepromin and Kveim tests are usually listed in this diagnostic category, although both present many atypical features compared with those manifested by the reference-type tuberculin test. They note also the diagnostic differences between the tuberculin, lepromin, and Kveim tests. A positive tuberculin test indicates infection by *M. tuberculosis* or by one of the species of atypical mycobacteria, but does not necessarily indicate active tuberculosis; a negative test, however, is valuable in virtually excluding this diagnosis. Since a lepromin reaction is found in a proportion of healthy people and has no diagnostic significance in them, a positive test would be useful in confirming a clinical diagnosis of the latter. Since a proportion of patients with active sarcoidosis give negative Kveim tests, such a result has not much significance; a positive test, however, is confirmatory of a clinical diagnosis of this disease. In considering the association of lepromin and tuberculin reactivity in patients with leprosy the authors note that in a given area the prevalence of tuberculin positivity is similar in (1) tuberculoid leprosy (usually lepromin-positive), (2) lepromatous leprosy (characteristically lepromin-negative), and (3) healthy persons. Comparing (1)

and (2), Lowe and McNulty (1953) found positive tuberculin reactions in 50% of patients with tuberculoid leprosy (96% lepromin-positive) and in 59% of patients with lepromatous leprosy (0.6% lepromin-positive). Apparently, therefore, there is complete dissociation between tuberculin and lepromin reactivity in leprosy. Closer analysis, however, reveals significantly weaker reactivity to tuberculin in lepromatous patients than in tuberculoid patients of the same age group and area (Wayson; 1934; Badger, *et al.* 1940; Leiker, 1961). This depression of tuberculin reactivity is far less striking than the suppression of lepromin reactivity in lepromatous leprosy and the considerable depression of tuberculin reactivity in many sarcoidosis patients. As to the effect of BCG vaccination, the authors note that a positive lepromin reaction can result from BCG vaccination in healthy persons, with "conversions" ranging from 44% to 99% (Fernández, 1939). This is presumably the result of cross-sensitization between BCG and the leprosy bacillus. Not surprisingly, in tuberculoid leprosy the already strongly positive lepromin reaction is not enhanced by BCG vaccination. In patients with active or inactive lepromatous leprosy who were also tuberculin negative, BCG vaccination induced weak lepromin reactivity in 11-50% in different studies, while converting normally to tuberculin reactivity. However, even the weak lepromin conversion was only transient, most of the patients reverting four or five months later. This failure of BCG vaccination to induce normal and lasting lepromin sensitivity in leprosy is similar to the poor tuberculin sensitivity after vaccination in many tuberculin-negative patients who have sarcoidosis. However, it is perhaps remarkable that BCG vaccination should induce any skin sensitivity to the leprosy-bacillus antigen (lepromin) in a patient whose whole body is likely to be saturated with the same bacillary antigen. The authors conclude: "We regard both the lepromin and Kveim tests as rare, if not the only, examples of a special "delayed-type" specific hypersensitivity in man to antigens of biological origin, and analogous to sensitivity to the

chemical substances zirconium and beryllium in specifically sensitized individuals."—N. D. FRASER

**Contreras Dueñas, F.** El problema actual de la prevención de la lepra. [The present problem in the prevention of leprosy.] *Medicina cutanea I* (1967) 29-40.

Report of comparative study of different methods employed today in the prophylaxis of leprosy. After a review of 208 recent papers dealing largely with BCG vaccination and chemoprophylaxis the conclusion is reached that the most important procedure is early diagnosis and treatment of the sick, which should be supplemented with social assistance and propaganda attracting the patients and their relatives. BCG cannot be considered as a true vaccination, nor is it harmless. It serves to bring about a change in the Mitsuda reaction from negative to positive, but it is not demonstrated that it immunizes. It will be necessary to continue attempts aimed simultaneously at the prevention of leprosy and tuberculosis, but always considering the method as secondary, and one that should never interfere with the principal procedure, i.e., diagnosis and treatment. Chemoprophylaxis, which steadily acquires more adherents, also should be considered as a complementing procedure.—F. CONTRERAS

**Jonquières, E. D. L. and Mosto, S.** Efecto de la vacuna Etcheverry sobre la reactividad cutanea a la LPT y a la lepromina integral. Primeros resultados a las 18 semanas. [Effect of the Etcheverry vaccine on cutaneous reactivity to LPT and to integral lepromin. Results after 18 weeks.] *Leprológia* 10 (1965) 82-85.

Five arrested lepromatous and two dimorphous patients, all of them Mitsuda-negative, were submitted to weekly injections of 0.10 ml. of a suspension of tubercle bacilli in an emulsion of cetylic alcohol, as proposed by Etcheverry. After 18 weeks the patients were retested. Four lepromatous and one dimorphous patient had become Mitsuda-positive, with small nodules. The Fernández reaction became strongly

positive in all cases. Histopathologic study of the apparent positive Mitsuda reaction revealed infiltrative structures vaguely tuberculoid, some of them with giant cells.—AUTHORS' SUMMARY.

✓ **Cardama, J. E., Gatti, J. C., Wilkinson, F. F. and Baliña, L. M.** Nuevos aportes a la tentativa de positividad de la reacción a la lepromina segun tecnica del Doctor Etcheverry. [New data on trials to induce positivity of the lepromin test according to the Etcheverry technic.] *Leprológia* 10 (1965) 89-92.

The authors studied a group of 30 lepromatous patients who had been vaccinated by Etcheverry himself with his original vaccine. After weekly injection of that preparation for periods between 6 months and 3 years, the lepromin test was converted to positive. Fourteen of the cases were studied histopathologically; a typical tuberculoid structure was revealed in 11 of them. As all the patients were retested each 2 months with integral lepromin during the period of Etcheverry's observations, the authors suggest that the positive results were due to retesting. After the death of Dr. Etcheverry 15 patients were observed during a period of 6 months without repetition of the vaccine. At the end of this period all were retested with protein total leprolin (LPT) or with integral lepromin. The 13 patients retested with LPT were negative; the two patients retested with integral lepromin gave very weakly positive Mitsuda reactions. The authors propose to continue the experience with low dilutions and doses of dead tubercle bacilli, or with lipids with 3 solvents (in order to avoid a Koch-like phenomenon common with the tubercle vaccine in the injected places). They think the tests should be made exclusively with leprolin, and not with integral lepromin.—E. D. L. JONQUIÈRES.

✓ **Baluev, N. M. and Jogleva, A. A.** [On the problem of efficacy of active immunoprophylaxis in endemic areas of leprosy.] *Vop. Leprol. i Dermat.* 4 (20) (1967) 151-155.

In one endemic area of leprosy, from

1955 to 1959, 4,375 persons underwent active immunoprophylaxis. All had been in contact with leprosy patients and after that had been vaccinated parenterally by BCG in large doses. A year later the Mitsuda reaction became positive in 71.6% of persons formerly negative. Between 1956 and 1962, 150 new cases were registered in that region, including only 34 of all those vaccinated. The number of cases was considerably less than the number taken ill in past years. The decrease in the disease was attributed not only to the vaccination by BCG, although it played a great role in that decrease. [From authors' summary.]

**Karat, A. B. A.** Advances in immunology and biochemistry in leprosy in the next decade. *Leprosy Rev.* 38 (1967) 97-101.

This paper should be read in full, but a few quotations may stimulate interest. "Immunology of leprosy is an area of scientific work where there is more confusion than clarity of thought. . . . The exacerbated phases in leprosy designated by the familiar term 'reaction' are a mystery. . . . The limited success with BCG both in the footpad work and in the field in protecting against leprosy establishes hope of the feasibility of the production of a vaccine which could be successfully used in prophylaxis against leprosy. This may well become the most significant advance in epidemiology and control of leprosy in the next decade. . . . So far we have taken it for granted that all neurologic deficit in leprosy is a result of damage to peripheral nerves caused by the activity of *M. leprae*. . . . I have often wondered whether the peripheral neuritis of leprosy may not in part be due to, or precipitated by, conditioned deficiency of folic acid and/or B<sub>12</sub>."—N. D. FRASER.

**Spickett, S. G.** Proposals for future studies in genetics. *Leprosy Rev.* 38 (1967) 109-112.

To this paper the Editor of *Leprosy Review* has added the following introduction: "Posthumous publication of notes by Dr. S. G. Spickett, B.Sc., Ph.D. With the help of Professor Thoday of Cambridge and Dr. S. G. Browne of the Leprosy Study



Centre, we have discovered these notes which contain a draft of Dr. Spickett's plans for a study of genetics and leprosy. Dr. Spickett had completed Parts 1 and 2, and they were published in *Leprosy Review* 33 (1962), and as we may never find the original script of Parts 3 and 4 we have decided to publish this draft, considering that it will be of value to other geneticists who wish to study this important subject in leprosy and as a memorial to his name." The paper should be read in full, but a genetic system is outlined from which the following is extracted: "It is possible to propose several genetic systems that fit such facts as are known. The ratios predicted from a single locus system are not consistent with the known facts unless there are multiple alleles. The most probable systems are those with two pairs of alleles or gene complexes. Such a system is outlined below:

A	Wild type
a	Nonresistance Locus 1
B	Wild type
b	Hypersensitive
A and B	Partially dominant

<i>Genotypes</i>	<i>Phenotypes</i>
AABB	Normal resistance
AABb	Normal resistance
AAbb	Tuberculoid
AaBB	Normal resistance
AaBb	Normal resistance
Aabb	Dimorphous tending to tuberculoid
aaBB	Lepromatous
aaBb	Dimorphous tending to lepromatous
aabb	Dimorphous equal tendency to lepromatous or dimorphous

The frequencies of "a" and "b" are low as compared with the wild type alleles and varying in populations. This system is, of course, highly speculative but provides a guide for the collection of data."—N. D. FRASER.

**Figueredo, N. and Balkrishnan, V.** Risk of infection in leprosy. Part I. Treatment of infector and other factors. *Leprosy Rev.* 38 (1967) 87-92.

This presentation consists of a statistical study of the risk in infection for contacts of infectious patients registered at the clinic of the Acworth Leprosy Hospital, Bombay. Involved in the study, among other factors, is the effect of treatment of the infectors on the risk of infection to their contacts. Information was obtained on 1,264 family members of patients who apparently commenced contact with their infectors before the age of 5½ years, from the Contact and Patient Register of the Acworth Leprosy Hospital, Bombay. Only lepromatous, infectious borderline and reactional tuberculoid infectors were considered. Detailed information is set forth in eight tables. The authors' analysis of the data indicates that treatment of the infector helps significantly to reduce the risk of infection to his contacts, and this independently of the age at which the contact started and the period of contact, as shown by the small values for interaction of treatment status with both age at start of contact and duration of contact. Contrary to expectation it was found that the longer the duration of contact, the less the risk of infection. Again, the risk is less if the contact starts at birth itself rather than later. These unexpected results become meaningful when the interaction between the two factors, which is highly significant, is taken into consideration. The only significant difference in the risk between those starting contact at birth and after birth is for short duration. It might be that individuals starting contact at birth have some amount of immunity at birth itself. This is further borne out by the fact that such contacts maintain the same risk for a longer duration while those who start contact after birth have a precipitate fall in risk from short to intermediate duration. It will be seen that, for all groups of contacts, treatment of the infector reduces the risk of infection substantially. If we consider a cohort of 1,000 contacts starting contact at birth (or *in utero*), 309 will become infected in four years, another 215 in the next four years, and another 79 subsequently. In all, 603, or about 60%, will be infected if the infector is untreated. However, if the infector has adequate treatment, those infected are reduced to 129, 116 and 69, respectively, or in all to

314, or about 31%. If contact started after birth, 549 will be infected in the first four years, 90 in the next four years, and another 90 subsequently, so that in all 729, or about 73% will be infected if the infector is untreated. However, if the infector has adequate treatment there is practically no risk.—N. D. FRASER.

**Figueredo, N. and Balkrishnan, V.** Risk of infection in leprosy. Part 2. Chemoprophylaxis. *Leprosy Rev.* 38 (1967) 93-96.

This presentation is a statistical analysis of the results of chemoprophylaxis with DDS, taking into account various factors that influence the risk of infection, as shown in Part 1 of this paper. The distribution of contacts according to different circumstances is set forth in five tables, while a sixth presents an analysis of variance of the arcsin transformation of per cent infected. An analysis of 575 contacts, with at least two examinations separated by a year, has shown a significant reduction in the risk of infection where there is adequate prophylaxis. This effect seems to be real, but the small size of samples with adequate prophylaxis renders it difficult to disentangle this effect completely from the effects of duration of contact and the treatment status of the infector.—N. D. FRASER.

**Wheate, H. W.** Infectivity of nonlepromatous leprosy. *Leprosy Rev.* 38 (1967) 107-108.

While it is generally accepted that most forms of nonlepromatous leprosy may pass through a phase in which the skin lesions are bacilliferous, very little is known of the frequency of such manifestations and in consequence of their importance. At the Chazi Government Leprosarium in Tanzania there has been a deliberate policy of concentration on the earliest possible diagnosis of the infective case at the rural dispensary, with the result that a high proportion of patients have been admitted suffering from an acute phase or reaction in the course of leprosy of a type other than lepromatous. Two hundred and six patients were classified into three broad groups and

the results were set out in the following table

Type	Bacteriologically				Total
	Positive		Negative		
	No.	%	No.	%	
Tuberculoid in reaction	38	66.6	19	33.3	57
Indeterminate in acute phase	52	78.8	14	11.2	66
Borderline tuberculoid	75	90.4	8	9.6	83
Total	165	80.0	41	20.0	206

The author concludes that the series indicates that in this part of Africa 80% of patients with acute (reactional) phases of nonlepromatous leprosy are potentially infective, and that the period of infectivity is likely to persist for several months in over 50% of such patients.—N. D. FRASER

**Rapport sur le fonctionnement technique en 1963, 1964 et 1965. Statistique des analyses VI. Lepre.** [Report on technical operations. Statistical analysis. VI. Leprosy.] *Arch. l'Inst. Pasteur Martinique* 18 (1965) 39.

The Pasteur Institute at Fort-de-France has continued during the three years named to contribute importantly in the campaign against leprosy, confirming by bacteriologic or histopathologic examination cases discovered in the Marchoux-Montestruc Dispensary, and acting in control of therapy in the leprosy sanatorium-hospital Albert Clarac. The year 1965 was especially encouraging as compared with preceding years in that only 34 cases were detected. These were classified as follows: bacteriologically positive, 17 lepromatous and 1 borderline; bacteriologically negative, 12 tuberculoid and 4 indeterminate. The greatest number of cases found came from Fort-de-France. BCG vaccination has been given systematically to contacts of all new cases, in cooperation with the Albert Calmette Dispensary, with tuberculin test control.—E. R. LONG

**Escudé, A. and Courmes, E.** Observations sur l'allergie tuberculique et léprominique des enfants cliniquement sains vivant au contact de lépreux en Guadeloupe. [Observations on tuberculin and lepromin allergy in clinically healthy children living in contact with leprosy patients in Guadeloupe.] *Bull. Soc. Path. exot.* **59** (1966) 289-296.

A program for the control of leprosy in Guadeloupe was established in May 1965, with emphasis on the examination of child and adolescent contacts and newly discovered cases. The survey has been followed up by BCG vaccination in appropriate cases. The results indicate that an antigenic relationship exists between the leprosy bacillus and the tubercle bacillus, and that BCG may be of value in the prophylaxis of leprosy, just as it is in that of tuberculosis. It is concluded from the study that BCG vaccination should be carried out not only in school children, but also routinely in newborn infants. Infection with leprosy may be observed within the first four years of life.—E. R. LONG.

**Karat, A. B. A., Sadananda Rau, G., Karat, Dr. (Mrs.) S., Job, C. K and Rao, P. S. S.** Epidemiological studies in leprosy in Gudiyatham taluk. Part I. *Leprosy Rev.* **38** (1967) 77-82.

The domiciliary treatment and leprosy control program for Gudiyatham taluk was inaugurated in the latter half of 1962 by the Schieffelin Leprosy Research Sanatorium, Karigiri, South India, in collaboration with the Swedish Red Cross, which undertook full financial responsibility for the program for an initial period of five years. Gudiyatham taluk, which is in the North Arcot district in Madras State, occupies an area of 481 square miles, and supports a population of 385,228. Up to November 1966, out of a total population of 256,103 in the areas surveyed, 197,756 persons have been examined. This report is mainly concerned with the presentation of data on patients suffering from leprosy in each of the three blocks into which the district was divided with reference to sex, age and type of disease, indicating the prevalence of

leprosy, in per cent of population examined. The data are set out in thirteen tables. In summary, the over-all prevalence of leprosy in the Gudiyatham taluk is 2.9%. The prevalence rate for lepromatous leprosy is 0.6%; it represents 20% of the total number of leprosy patients. There is a significant difference in the prevalence of leprosy between men and women, but not among children. The pattern of leprosy among children is different from that observed among adults. Preliminary analysis of the intrafamilial incidence of leprosy shows a 10% prevalence among all families. The pattern according to the type of leprosy is similar to that observed earlier according to individuals.—N. D. FRASER

**Blum Gutierrez, E.** El programa de control de la lepra en el Ecuador. Consideraciones sobre los dos primeros años de actividades. [Leprosy control program in Ecuador. Comments on the first two years of its activities.] *Bol. Ofc. Sanit. Panamer.* **62** (1967) 120-131.

During the last four centuries, since the time when the Spanish settlers introduced leprosy in Ecuador, various foci of the disease have been established in the country. At present the most important are in the provinces of El Oro, Guayas, Los Rios and Loja. The current leprosy program was initiated in 1962 under the direction of the Ecuador Department of Health, with the cooperation of the Pan-American Health Organization of the World Health Organization and UNICEF. An evaluation is presented for the period July 1963 to June 1965. The principal elements in the program have been: case detection, treatment, control of contacts, training of medical and paramedical personnel, and rehabilitation. The most productive procedures were registration of cases, examination of contacts, and dermatologic examination. The least productive were mass surveys and examination of school children. A total of 354,065 persons, representing over 82.7% coverage of the groups for which examination was planned, were examined. Present plans call for a 15% sampling of the entire population of 4,892,500. In the survey completed thus far 780 new cases were discovered, bring-



ing the total of registered or internal cases in the country to 1120. The prevalence of leprosy in the sample was 2.26/1,000, or a minimum of 0.23/1,000 for the whole country. Of the new cases 39.5% were lepromatous, 38.8% indeterminate, 21.2% tuberculoid, and 1.5% borderline. The examination of contacts covered 2,772 cases, i.e., 64.6% of the known total contacts. The attack rate of contacts was found to be 17.5%. At present, hospitalization is selective and temporary. Control and treatment are practiced generally on an ambulatory basis. [From author's summary.]

**Silva Martinez, E.** Estado actual de la lepra en Guatemala. [Present state of leprosy in Guatemala.] *Acta. Leprol.* **26** (1966) 22-30.

The present total of registered leprosy patients in Guatemala is 180; 62% of known cases are lepromatous. Seventy-three per cent of cases are male, 31% are in the 30-39 year age group, 57% are rural residents, although patients are found in all parts of the country, and 28% come from the Department of Guatemala, the most densely populated department of the country. The highest prevalence, 0.12/1,000, is found in the Department of Sacelepaquez. Of a total of 695 contacts, 191 (28%) have been examined by lepromin test and other procedures, but no specific prophylactic measures have been taken. Methodical control of leprosy by official health authorities is urgently needed. [From author's summary.]

**Perier, H.** La lépromino-réaction de la population de 5 villages en région de savana et de forêt au Congo Brazzaville. [The lepromin test in the population of 5 villages in savannah and forest areas in Congo Brazzaville.] *Bull. Soc. Path. exot.* **58** (1965) 969-982.

The delayed lepromin reaction (Mitsuda) was studied in five villages (savannah and forest), the population of which was for the most part of Bantu origin. The test was positive early in life, in contrast with the delayed appearance (20 years) of the disease leprosy. The early lepromin test

(Fernández) is valid only if strongly positive.—[From author's abstract]

**Okada, S., Nishiura, M., Charoenbhakdi, A., Buti, S. V. and Kettanurak, C.** [The report of field investigation on leprosy in Thailand. I. The characteristics of clinical signs of leprosy in Thailand.] *La Lepro* **35** (1966) 198-204.

The authors report the results of a field investigation on leprosy in Thailand which lasted for 50 days from 5 February 1966. Hypochromic macules were seen in patients of every type more frequently than in the mainland of Japan. Hypochromic patches combined with other findings were seen frequently. In general, the lepromatous infiltrations in Thailand are thinner than those seen in the mainland of Japan. Erythema nodosum leprosum (ENL) complicated by high fever and other general symptoms is less frequent. The frequency of occurrence of acute iridocyclitis and arthralgia in patients with ENL is less than in the mainland of Japan. On the other hand, the ulceration and necrosis of ENL are more marked than in the mainland of Japan. Alopecia and depilation of eyebrows or cilia are less. Lepromatous changes of sclera and cornea and acute iridocyclitis are less than in the mainland of Japan. Also the number of blind patients is less. Claw hand, foot drop, wrist drop and facial paralysis are less than in the mainland of Japan. The difference is marked especially in wrist drop and facial paralysis. Plantar perforating ulcers were seen more frequently than in the mainland of Japan. Other differences were that lepromatous change in the nose, compared with those in other parts, was more marked than in Japan, and lepromatous infiltration of the palms was seen more frequently in patients who were not severely affected. (From abstract by I. R. Innes, *Trop. Dis. Bull.* **64** (1967) 630-631.)

**Okada, S., Nishiura, M., Charoenbhakdi, A. and Kettanurak, C.** Report of field investigations on leprosy in Thailand. II. Study on the Dharmendra reaction of children in Thailand. *La Lepro* **35** (1966) 213-230. (In Japanese; English summary.)

Children in contact with leprosy, non-



contacts and leprotic children under 10 years of age in Thailand were subjected to physical examination, and Dharmendra and tuberculin tests (read 48 hours after injection). Fourteen of 287 children showed clinical signs of leprosy, 12 showed enlargement of nerves only, and 2 showed hypochromic macules. The Dharmendra reaction was positive more frequently in leprosy-contact than in noncontact children. All babies less than a year old were Dharmendra-negative, but at one year some strongly positive reactions were seen. Among leprosy-contact children Dharmendra reactions were generally stronger in females than in males. Dharmendra-positive and tuberculin-negative children were found, and vice versa, but the number of children positive to both antigens was small. The two reactions could not be correlated in children less than 10 years old. Natural infection by tubercle bacilli does not lead to a positive Dharmendra reaction. Children positive to Dharmendra antigen and negative to tuberculin have been infected with leprosy bacilli; conversion to Dharmendra positivity does not lead to a positive tuberculin reaction, but infection with leprosy bacilli does not always lead to a positive Dharmendra reaction. The early Dharmendra reaction is recommended for epidemiologic investigation. BCG inoculation at an early age is also recommended. [From authors' abstract.]

**Russell, D. A.** Leprosy in the Territory of Papua and New Guinea. *S. Pacific Bull.* 17 (1967) 31-34.

In the Territory of Papua and New Guinea, there are thought to be some 13,000 cases of leprosy and a prevalence of approximately 7.7 per 1,000. Leprosy is spread throughout the Territory and the predominant type is tuberculoid. Although isolation is legally compulsory, it is not the policy actually pursued. Rather, selective isolation of some infectious patients and outpatient treatment of others is practiced where possible. There are 11 leprosy colonies in the Territory, run by various missions, and subsidized by the Administration. Only about one half of the estimated cases are being treated at present, largely

because of tremendous difficulties of transport in the Territory. However, an active case-finding program, a treatment campaign and a very lively surgical reconstructive team are all attracting attention and attempting to integrate leprosy into the general medical services.—J. C. HARGRAVE

**Grebennikov, P. S., Torsueva, N. N. and Kharabadjakhov, K. K.** [The experience of the Rostov experimental-clinical hospital for leprosy patients in preventing relapses in leprosy.] *Vop. Leprol. i Dermat.* 4 (20) (1967) 143-150.

The authors describe briefly their experience in the Rostov hospital for leprosy patients in preventing relapses in leprosy and their first successful results in this respect. The aim of the paper is to share the experience of the authors with workers in other antileprosy institutions. [From authors' summary.]

**Kharabadjakhov, K. K.** [The Don dermatologists in the campaign against leprosy. Fiftieth anniversary of the opening of the clinic for skin and venereal diseases.] *Vop. Leprol. i Dermat.* 4 (20) (1967) 19-33.

The author deals with the history of the campaign of skin and venereal disease clinics against leprosy on the Don. That campaign was carried out under the guidance of P. V. Nicolsky (1916-1930), Z. N. Grejebin (1930-1941), and N. A. Torsuev (1944-1961) in the skin and venereal disease clinic of the Rostov State Medical Institute. The author's work is based on a large amount of documentary material in the Rostov State Archives, which has not yet been published, and on other literary sources. Especially effective and fruitful work in the fight against this infection was carried out under the guidance of N. A. Torsuev, when he opened the experimental-clinical leprosy hospital in Rostov-on-the-Don. [From author's abstract.]

**Ivanova, N. A. and Euschenko, A. A.** [On the life and scientific activities of V. I. Kedrovsky.] *Vop. Leprol. i Dermat.* 4 (20) (1967) 34-42.

V. I. Kedrovsky was a prominent representative of the Moscow school of pathologic anatomists, and one of the leading microbiologists in Russia in the first half of the 20th century. He was the founder of experimental leprology and organizer of scientific campaigns against leprosy in the U.S.S.R. From 1927 to 1937 he was the leader of the leprosy section, organized by himself at the Tropical Institute. He was a member of the International Leprosy Association and after 1933 of the editorial board of the *INTERNATIONAL JOURNAL OF LEPROSY*. His work on the microbiology and pathomorphology of leprosy made his name known to leprologists in the whole world, and his classic investigations of the mycobacteria of leprosy and tuberculosis put him in the front rank of pioneers in the studies of the mycobacterial variation. [From authors' summary.]

**Brusco, C. M.** Acción de los médicos privados en la educación sanitaria antileprosa. [The role of private physicians in antileprosy health education.] *Leprología* **10** (1965) 173-178.

This paper presents general considerations on the value of a comprehensive

stand on the leprosy problems for general practitioners. In Argentina there is one medical doctor for each 750 inhabitants. Therefore their information with respect to leprosy is very important for leprosy control, since the detection of incipient cases is the principal factor in this field.—E. D. L. JONQUIÈRES

**Brusco, C. M.** Debe existir una ley de lepra? [Should a special law be in effect for leprosy?] *Leprología* **10** (1965) 169-172.

Legislation with respect to leprosy must take into account public health as well as the protection of the patients. Sanitary laws are based on medical and social facts. In this field not only physicians, but also laymen and sociologists are included. There is no difference between a special antileprosy law and a group of special articles for leprosy included in general legislation on communicable diseases. The important point is that sanctions against those that infringe upon the law must be applied.—E. D. L. JONQUIÈRES [In Argentina many doctors avoid report of leprosy cases to the Dirección de la Lucha Dermatológica (Leprosy Control). So statistical data do not reflect the real number of cases in this country.—E. D. L. J.]